THE JOURNAL

OF THE

ANTHROPOLOGICAL INSTITUTE

OF

GREAT BRITAIN AND IRELAND.

DECEMBER 11TH, 1876.

Colonel A. LANE FOX, F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following new members were announced:—

Rev. A. H. SAYCE, Queen's College, Oxon.; G. TIPPETS, Esq., Plymouth; T. F PEACOCK, Esq., Gray's Inn.

The following presents were announced, and the thanks of the meeting were voted to the respective donors for the same.

FOR THE LIBRARY.

From the AUTHOR.—Christian Missions. By the Rev. A. C. Geekie, D.D.

From the SOCIETY.—Proceedings of the Literary and Philosophical Society of Liverpool. No. 30, 1875–6.

From the SOCIETY.—Transactions and Proceedings of the Royal Society of New South Wales, Vol. IX.; Mines and Mineral Statistics of New South Wales; Transactions of the Philosophical Society of New South Wales; Mineral Map and General Statistics of New South Wales; Progress and Resources of New South Wales.

From the LIBRARY.—Twenty-fourth Annual Report of the Manchester Public Free Libraries.

From DR. JAMES HECTOR.—A Compendium of Official Documents relative to Native Affairs in the South Islands. 2 Vols. Fol. Compiled by Alexander Mackay.

From the ASSOCIATION.—Journal of the Royal Historical and Archæological Association of Ireland. Vol. IV, Nos. 25 and 26.

From the EDITOR.—Matériaux pour l'Histoire de l'Homme, for November, 1876.
From the EDITOR.—Revue Scientifique. Nos. 23 and 24, 1876.
From the EDITOR.—Nature, to date.

The following paper was then read by the director in the absence of the author:—

NOTES *on the* JAVANESE. By A. H. KIEHL.

AMONG the many islands which compose the so-called Malay Archipelago, the Island of Java is undoubtedly the most important, because of its extensive commerce, its great fertility, and by reason of its being the seat of the Dutch Colonial Government. It is mountainous and of volcanic origin; its south coast is bold and rocky, but its north coast is low and swampy, especially near the rivers, which wash down the soil from the mountains and deposit it in extensive mudbanks at their mouths; a fact which tends materially to increase the superficial area of the island northward, but which is a serious obstacle to the formation of artificial harbours. It is one of the numerous volcanic islands forming a regular volcanic chain from Acheen Point to Ombay Straits. Off its northern shores numerous diminutive islands of coral formation are found, the coral-lines being still at work in some parts, while in other parts the coral rock is left by them to decay.

It is situate between the 6th and 9th parallel of south latitude, and the 105th and 115th meridian east of Greenwich, and enjoys a season of dry and fine weather from April to October, and a rainy season from October to April. Its size is about equal to that of England (Java 51,336, and England 50,922 square miles), and its population, which, according to Mr. A. R. Wallace (Malay Archipelago, Vol. I), amounted in 1826 to 5½ millions, and in 1865 to 9½ millions, has actually trebled in 48 years, for by the last census it was 16½ millions (1874), giving an average of 320 persons to the square mile, as compared with 260 persons to the square mile in the United Kingdom (21,500,000 in England, 1,212,000 in Wales, 3,360,000 in Scotland, 5,403,000 in Ireland = 31,475,000, or 121,608 square miles), and being yet annually increasing. The great fertility of the country, however, will allow of a very much larger number of inhabitants, there being yet plenty of uncultivated tracts of land overgrown by luxuriant vegetation (according to some authorities only one-third is cultivated), where the tiger, the rhinoceros, the wild boar and the ape, roam unmolested.

I consider the aborigines of Java, Madura, and Bally, to consist of two different branches of the Malay race; the Malays proper forming the one, and the Javanese proper, the Madurese, and the Ballinese forming three different families of the other branch.

a. *General description.*—All these four have much in common, their stature being comparatively small, only reaching a little above the shoulder of an average-sized European: their colour is light-brown, their hair jet-black and straight, their eyes dark, their noses flattened, their nostrils distended, their teeth regular, and their bodies are well-proportioned. Their limbs, and especially their fingers, are very pliable, and they seldom grow corpulent, and never very old.

b. *Distinction between Javanese and Malays.*—Notwithstanding all these points of resemblance, there is but little difficulty in distinguishing the Javanese from the Malays proper. Of the two, the Malays are the smallest and stoutest, their heads are more globular, their faces rather broader and flatter, and their noses rather shorter than those of the Javanese: but besides this, they wear their hair cut and loose (the males), whilst the Javanese and Madurese always wear it long, and tied up in a knot at the back of the head like a woman's. The Ballinese, again, wear it long and loose, only tied by a ribbon or piece of cloth so as to prevent its hanging over the face. These latter are decidedly stronger and taller, as well as more robust-looking than the Javanese. The Sundanese, who inhabit part of the west coast and the islands between Java and Sumatra, resemble the Malays in form and stature, although speaking another language. This nation may be said to be indigenous to those islands, whilst the Malays are known to have come from Sumatra, and to have spread all over the Archipelago in the course of time; yet the period when they settled in Java must have been a very remote one. There is good reason to believe that the name Java, or Yava, applied to Sumatra as well as to Java in olden times. That the Malays do actually belong to a different branch than the Javanese proper is shown, not only by their different language and peculiarity in dress, but also by their living together in villages apart from the Javanese, except in the western part of the island, where the Malays predominate, and where but few Javanese proper are found.

c. *The women.*—The Javanese women are small, have beautiful dark eyes, and long, thick, black hair, fine busts, and, when young, have beautifully white and regularly set teeth.

d. *Feet.*—As to the feet of these people, not being accustomed to wear shoes, their toes stand out, apart from each other; and the muscles of the toes are generally so well developed, that

they need not stoop down to pick up an object, but manage it very well with their feet.

e. *Languages.*—Of the Malay language, it is said that it is spoken from the Cape of Good Hope to the Molucca Islands, which probably means that there are some people found in the several countries enclosed within the above limits who speak it; but although this assertion does not rightly describe the true position the Malay language occupies, yet it is quite certain that from Acheen to New Guinea it is the language with which a traveller can get along, the same as with French on the Continent of Europe. It is a soft-sounding language, but poor in words, and contrasts in this respect unfavourably with the rich Javanese language (or rather languages), which has its own written characters and a literature of its own, and of which the Malays in Java have adopted many words and expressions, as they have also from the Portuguese.

Both languages are admirably adapted to poetry. Nearly every native of this country can extemporise little songs, and they are so fond of doing this, and conversing in this poetical way, singing their ditties in a whining, melancholy manner, that the singing of these so-called pantongs occupies nightly all the time between their lying down and their actually dropping off asleep.

f. *Cleanliness.*—As in this hot climate bathing is a great treat, and as the Javanese are very clean in their persons, the rivers of Java are hardly ever seen without at least some bathers of either sex. Both sexes are good swimmers, but they swim like dogs, stretching out first one arm and then the other, and the legs likewise. They wash their bodies, and especially their hands, very often; also they are very clean as regards their food, and wash their rice six or seven times before boiling it. The right hand prepares the food, and is never used for the purpose of taking up or throwing away dirt, which is always done by the left hand.

g. *Filthy peculiarities.*—In one respect, however, they are filthy. Whether from superstition or stubbornness, they do not use fine-toothed combs, and as their hair is long and thick, and kept covered by a handkerchief, they nearly all suffer from having a colony of parasites on their heads, which they have no means of getting rid of but that of asking a friend to help them. Friends so employed may be met by the score every day, and as some of these fellows are so tender-hearted as to be unable to kill these parasites, they often throw them away only, a fact which, I need hardly say, is extremely dangerous to passers-by.

h. *Articles of dress.*—The dress of the males consists of the *sarong*, a cylindrical piece of cloth, mostly coloured calico, about

2 yards wide and 1 yard long, which is drawn tight around the loins, and folded up in front, and then rolled up so as to keep it tight. A belt is then fastened over this. The *badjoe*, or jacket, has very tight-fitting sleeves, a standing collar, and a row of buttons, placed very close together. This is also mostly of calico, chintz, or print, but the chiefs and princes often wear fine cloth, or velvet jackets, with white waistcoats underneath, having gold buttons. The *tjelana*, or trousers, generally worn short by the Javanese, but long by the Malays. The *stangan kapala*, or head-kerchief, worn in different ways by the Malays and by the Javanese, the latter, as well as the Madurese, winding it around their heads and the knots of hair at the back of their heads, leaving the two tips to hang loose behind, and the Malays generally hiding the tips, and wearing them more turban-like. The Ballinese merely use narrow strips of cloth around their heads, exposing their thick hair to the sun's rays, and allowing it to flow loose behind. Around the loins, over the belt, the Malays and Javanese wear one or more scarves, under which the purse or money-bag is concealed, and into which the kreese or dagger, with its scabbard of bamboo, brass, or even gold, is stuck at the back. Those who cannot afford the luxury of a kreese, always carry a chopping knife, or a small hatchet in their belt. The Malays often dispense with the sarong, or tuck it up high; the Javanese often dispense with the trousers, but when out hunting, it is a common thing for them to wear long trousers, with straps passing under the feet, and leather gaiters besides, which leave only the toes uncovered.

The dress of the females resembles that of the males, except in the matter of the head-kerchiefs and the trousers, which they never wear. The *badjoe*, or jacket, is not worn by adult females; it is longer than that of the males, and is superseded by the kabaya, or tunic of white or coloured calico, or silk, which is worn open in front, or crossed over the breast. The *sarong* is worn like that of the males, and consists of the same materials. The *slendang* is an article of dress resembling the sarong; like it, it is worn around the loins, over the sarong, or slung over one shoulder; or used to carry a child or any other load in, as the case may be. The well-to-do women often wear very costly belts around the loins, also bracelets (galangs) and rings. The sarongs and slendangs are sometimes of very rich material. The slendang is waved about very gracefully by the *ronggings*, or female dancers, at evening parties or festivals; and such is the charm it then possesses, that no male member of the company will refuse to take hold of the other end of the slendang which is offered him by a pretty rongging, and to dance with her for a while. A pair of pretty, gold embroidered little slippers, which

only hide the toes in part, are often worn by rich ladies, and sandals are sometimes worn by the men, but in other cases the legs and feet are bare.

The hair, which is shining black, is often adorned with flowers, and very often odoriferous herbs are tied up in the knot of hair. The men also will adorn their hair with flowers on festive occasions. They also often protect their eyes against the fierce rays of the sun by a screen or cap without a crown, but more often by the *toodoong*, or sun-hat, a sort of umbrella shaped contrivance, made of bamboo, and coloured or gilt and varnished, so as to make it impervious to either sunshine or rain. The ladies, however, prefer the *payong*, or sunshade, which article is also extensively used by the males; a prince or a grandee being distinguished by this or that particular sort of sunshade (the very highest having one completely gilded over), which is carried by a servant walking behind him, another servant carrying the condiments for chewing the sirih and betel-nut.

The children of both sexes are allowed to go naked up to their eighth or ninth year, and it is not at all unusual to see a little girl running about in that state one year, and to find her back a married woman, or even a mother, at the end of the next. The boys are circumcised about the same age, and from that moment they go fully dressed, whereas they either go entirely naked, or have only a sarong slung over one shoulder, or girt round the loins shortly before.

i. *Horsemanship.*—The Javanese are very good horsemen, but their horses are small, not larger than small ponies, but very spirited. Their saddles are different in shape from ours, and in riding, the Javanese only puts his big toe into the stirrup, instead of the whole of the foot.

It is a mark of respect for a rider to dismount, sit down by the roadside and uncover when a personage approaches, and not to mount again until he has passed. Princes and rulers are always so revered, and often the horseman follows in their suite for a while before he proceeds on his own journey.

j. *Sitting.*—To sit down in a crouching attitude is considered respectful. A servant when he has a long report to make, or to listen to his master for some time, always sits down on his haunches. If, however, the talk is not likely to last long, he only bows, lifts his hands as if for prayer, and joining them together, lowers them until they reach his knees; this being repeated as often as he has to give a reply. Whenever a Javanese wants to make himself thoroughly comfortable, he always sits down on his haunches, or lies down altogether, laziness not being considered a vice, nor yet an improper thing, but something natural, like hunger and thirst. Chairs are now in

general use by the more refined Javanese, especially easy and rocking chairs; but yet the national custom is always to lie or sit down on the floor, or on the bamboo couch which is fixed in every house, and serves for seat, table, and bedstead alternately.

k. *Bedding.*—The *tikar* or mat, and the *bantal* and *bantal gooling*, square and round pillows, filled with kapoc, constitutes all the Javanese's bedding, which he can roll up and walk away with quite as easily as the healed Hebrews of the New Testament. He rolls it out at night, and spreads it on his *bali-bali*, or couch, and in the morning he rolls it up again, and puts it into a corner.

l. *Houses.*—The houses of the Javanese and of the Malays are built of bamboo, roofed with leaves of the sago or other palm tree, and are only one story high. They contain neither fireplaces, chimneys, nor glass panes in their windows. Those of the poor have no other flooring than the ground, one or two bali-balies, at a height of about 3 feet, and a sort of attic under the roof. Those who are better off have houses containing two, three, or more rooms, and a verandah in front, and also at the back. The flooring is made of split bamboo, flattened out into boards; they also have a sort of Venetian blinds in the windows and doorways and outhouses for cooking, which the poor people always do in the open air.

Under the shadow of the overhanging roof, naked children, fowls, goats, and tame monkeys, may often be seen playing about and running in and out of the never closed doors. Under the mighty cocoa-nut trees, which are quite indispensable to the existence of the Javanese, or in a sort of stable, one or more cows or bullocks, a cart, a plough and a hoe, rude implements of agriculture, are often met with; and wells, with brick-built and white-washed walls, are found in abundance near every village.

A substantial one-roomed bamboo house could be built (in 1850) for three rupees (5*s.* sterling). It takes a few weeks to build one, but it takes far less time to take it down and remove it. A gentleman at Sourbaya, having bought some land for a shipbuilding yard, stipulated that the ground should be cleared of buildings at a given time. Some hundred dwelling-houses stood on this ground, in fact, quite a village, and when the shipbuilder saw nothing done up to the day before the stipulated time, he complained to the magistrate, who put him off till the morrow. What was his surprise when he visited the spot on the forenoon of the next day, and found not a vestige remaining of the entire village, may be better imagined than described. Early in the morning each of the occupants of every house had lent a hand, carrying away his portion of building material and furniture; so that no longer any ground of complaint existed.

The houses of the Ballinese are built of stone (unhewn), with finely carved and painted pillars of wood inside, supporting the roof, decked with pantiles or bamboo, and palm leaves. The door gives entrance into the middle of the only room, and facing it is something resembling an altar. A bamboo couch extends on each side, from wall to wall, and the bedding consists of well-made mattresses, stuffed with kapoc. One or two steps of stone often lead up to the door.

m. *Utensils for cooking, &c.*—Rice being the staple article of food of the Javanese and Malays, a few neatly made baskets of bamboo, in which it is washed and often also steamed, a bamboo sieve, a cocoanut ladle, two or three copper or earthenware pots, and a saucer with a wooden rubber to rub the sambal (a condiment for the rice), and sometimes a china basin and spoon, is all the housewives want for their cooking utensils. A yoke, two pairs of bamboo water-buckets, or a pair of water-baskets, and a broom of rice-straw with a bamboo handle, these complete the list of articles for household use. They eat with their fingers and drink from the ladle or out of a water-bottle without touching it with their lips, pouring it into their throats in a small stream.

n. *Food.*—1. (*Cocoanuts.*) Next to the rice, of which I shall treat more at length, the cocoanut is the most indispensable article of food to the Malays and the Javanese. Whenever a child is born, a cocoanut is planted, and this is the only record held of its age. If it asks how old it is, the parents point to the young tree, telling the child that it is as old as that tree. When the cocoanut has grown to its full size, the outer shell yet being green, the nut contains water only, which is then a very favourite drink, and it is certainly very refreshing, although not what we would call nice. When the colour of the shell turns yellow and brown, the woody shell commences to form, and a thin coating of the real nut, like the white of a soft-boiled egg, commences to gather against the sides. This, when scraped out with a spoon, is very nice to eat, and the water inside is then still good and refreshing. But when the nut is ripe, and the wooden shell quite hard, then the outer shell has already become hairy and the water inside is no longer considered a nice drink. It is mostly thrown away, but the nut is taken out, rasped, steeped in hot water, and pressed out, the milky juice being used for cooking. Or the nut is boiled for the making of cocoanut-oil. Often the rasped particles are fried and used as condiments to the rice. To climb up a cocoanut tree, the Javanese takes a handkerchief or a string, ties it into a sling, into which he slips his feet, and then places them against the tree, one on each side, adjusting the sling so that it will suit the size of the tree. He

then takes hold of the stem with his hands, reaching as high up as he can, draws his knees up to his elbows, presses his foot-soles firmly against the stem, so as to obtain a firm footing, and repeats this operation, by which he gains about a foot and a half each time, as often as required, until he reaches the top, when he grasps a branch with his left hand, and with the right hand reaches his *parang* or chopping knife, with which he cuts off as many nuts as he wants, letting them fall to the ground. Some of the lower trees he cuts steps in, by which the ascent is easily made.

2. (*Bananas.*) The banana or pisang tree is also very useful to the Javanese. The better kinds of this fruit are very sweet and agreeable to the taste. When unripe and boiled, it resembles the potatoe, but it is in West India and not at Java that it is so prepared; when ripe, it is either eaten raw or coated with dough and fried in cocoanut-oil. When dried, it tastes like the date. The leaves are used for packing purposes, like paper in Europe. At every bazaar pisang-leaves are sold, together with small bamboo-pins; and anything eatable which is sold there is wrapped up in a pisang-leaf and pinned up with bamboo. The stem of the tree is used for sticking the figures of the *wayang* or theatrical performance in.

3. (*Insects as food.*) Under various circumstances the Javanese will eat different insects, such as white ants, cockroaches, locusts, and even the abominable *walang sangit*, a species of cricket which emits a very foul smell; but of pork they have an undisguised abhorrence, like faithful Mahometans. These remarks apply also to the Malays.

4. (*Sugar.*) Besides from the sugar-cane, the Javanese obtain sugar from the cocoanut water, and from the sap of the areng palm. It is sold in half-spherical lumps, and is nearly black.

5. (*Condiments to the rice.*) Salt and cayenne pepper, fried shrimps or other fish, salted or fresh, onions, garlic, cucumbers, and other vegetables are used as condiments to the rice, and the favourite compound is sambal, consisting of chillies, onions, salt, and *trassee*, mixed and rubbed to a paste in a dish or saucer. This trassee is salted shrimps in a state of half putrefaction. Eggs, salted and boiled hard, are also used. They are salted by being put into salt clay. Maize and Yams are also used for food at times.

6. (*Rice.*) The numerous appellations given by the Javanese to rice in its various forms and conditions, sufficiently indicate the great importance attached to this grain by the natives. A rice field is called a *sawah* when the rice is cultivated in irrigated fields (in the plains or on the mountain slopes), a *tipar* when cultivated regularly but without artificial irrigation, and a

gaga when the rice is sown in recently and but imperfectly cleared ground on the mountains. The young shoots are called *beebit*, the growing corn is called *padie* (*paree* in Javanese), when separated from the straw it is called *gabbah*, when the husk is taken off it is called *brass*, when boiled dry it is called *nassee*, and when boiled wet as in Europe, it is called *booboor*. It is then often boiled with cocoanut-milk.

The Javanese are very fond of agriculture, and especially of the cultivation of rice. For this purpose many mountain slopes have been transformed by them into immense flights of steps or terraces; each terrace or *pittakh* being perfectly level and bordered by a dam. A beautiful system of irrigation allows these fields or terraces to be inundated or watered and drained as occasion requires, and some mountains are so cultivated up to a height of between two and three thousand feet above the sea level. Nothing can equal the beauty of these velvet-like steps up the mountains, traversed by little rills of water, glittering in the bright sunshine.

o. (*Cultivation of rice.*) In order to obtain a crop of rice, it is not sufficient that the ground be ploughed three or four times over, and then be sown with corn; on the contrary, it requires the planting out, one by one, of the young rice plants or beebit, previously closely sown in separate fields. Women and children generally undertake this task. The so-planted fields are kept under water for several weeks, being only occasionally drained off for a day and then irrigated afresh. Only when the plants are full-grown the fields are allowed to become dry. Then it is that long strings are spread out over the fields, having numberless little rags, dolls, bamboo-bells, and ornaments attached to them in order to scare away the birds, especially the so-called Java sparrows (*Fringilla oryzovora*); and these strings are every now and then shaken by the little folks whose duty it is to watch them, from little bamboo-huts forming centres to these gigantic cobwebs. Some miniature windmills may also be seen in full swing; these are placed there to frighten away the evil spirits. When at last the crop is ripe, the fields have entirely dried, and the reapers, men, women, and children, hasten to the harvest with songs of gladness, dressed in their gayest colours, and adorned with flowers. Popular prejudice, and not necessity, obliges the stalks to be cut, one by one, about a foot below the ear, by which process the whole of the valuable rice-straw is destroyed, for it is too short for use, and the rest, being stubble, is burnt. The rapidity with which the cutting proceeds is astonishing, if it is considered that the stalks are cut one by one, yet if contrasted to the European modes of reaping, it may be considered a slow process. The wages earned are paid in kind,

and are carried away every evening by the women in their *slendangs;* they range between twelve and twenty per cent. of the crop reaped. The remainder is garnered in *lombongs* or barns of square forms, widening towards the top, built on poles erected on large blocks of stone. *Kandangs* or stables are used for the bullocks, of which the farmer seldom owns more than two, and mostly only one. They are called *kerbo's*, and are very lazy, but very intelligent, and as faithful as dogs. They delight in bathing and covering themselves with mire, by which means they keep off the sting of insects.

The different seasons for the cultivation of the rice, for sowing, planting out, drawing off, reaping, &c., are appointed by the priests, and vary in their duration from 25 to 40 days.

Superstition also prevents the Javanese from applying other manures to their rice-fields than the ashes of the stubbles and the mountain-water, which latter, no doubt, formerly answered well enough, but which now often fails to supply all the necessary fertilising ingredients, these having in the course of time gradually been washed down from the mountains and absorbed in former crops. The crops might certainly be doubled, if not trebled, under proper treatment; proofs thereof are not wanting in the lands owned by European landowners, but the soil belongs to them, say the Javanese, and they mean to do with it according to their *hadat* or custom!

A great loss is also occasioned by the manner in which the rice is deprived of its husk. This is done by pounding it with a wooden pestle in a large wooden mortar, and a large percentage of the corn is thus broken, and much is ground to powder; so that about twenty per cent. altogether is lost for human food. Yet it is so difficult to convince them of their errors, that whereas steam and water-mills exist, owned by Europeans and Chinese, in which natives are employed, yet the number of native mills is extremely small.

Numberless are the forms in which rice is eaten. Dry or wet, in the form of a mass of gluten, or in that of nice cakes, in leaves, or in little mats, in nearly all these forms it is obtainable, together with some condiments at the bazaars, or at the corners of the streets or roads. For about twopence visitors may obtain at the stalls in the bazaars a leaf of beautifully white rice, a saucer of fried shrimps, some sambal, fruit and sweets, together with some cooling drink, or, if he prefers, a cup of execrable coffee over-sweetened and without milk, which is the way the Javanese always drink it.

Rice is sold by the *gantang*, a measure made of a large cocoa-nut-shell so as to contain about 1½ lbs., or wholesale by the *picul*, about 130 lbs. English. A *koyang* contains 100 piculs.

p. *Cultivation of fruit and other trees.*—Although the Javanese are very fond of agriculture, it is a remarkable fact that they do nothing to improve their fruit trees. The only efforts in that direction have been made by the Ballinese. The way in which cuttings are obtained, however, is deserving of notice. In that hot climate cuttings, if planted as they are in this country, would dry or become scorched. The practice of the Javanese, however, is to put a lump of damp earth around the branch just above the place where it is intended to cut it, and to wind a leaf around it. After a certain time tiny roots shoot out from the branch into this lump of earth, and when these have become sufficiently large and strong, the branch is cut below the lump, the leaf removed, and the whole carefully planted in a shady place.

q. *Salt-making.*—Salt is obtained by letting the sea-water into enclosed fields at high water, and then shutting it off. The rays of the tropical sun soon cause the water to evaporate, when the salt remains, imperfectly crystallised, brown from the mud, and smelling strongly of the fishy remains which adhere to each crystal; and it is in this repulsive state that it is most relished by the Javanese, who for it reject the finest white salt.

If you want to remain on friendly terms with the people of the districts where salt is made, you should not protect your head against the fierce rays of the sun by a sunshade or a sun-hat, as popular prejudice is very strong on this subject.

r. *Music.*—The musical instruments of the Javanese consist of the *Biola* or one-stringed violin; of different sets of hand-bells arranged in frames, some frames containing four low-toned bells, others as many as 12 or 14; then they have several pairs of gongs or tamtams of different sizes and tones; one very large gong; and, finally, an instrument of a coffin-like form containing, say, 15 small pieces of flat cut bamboo, arranged in a row, and played upon by a small wooden hammer with a long and pliable handle; the longer pieces of bamboo sounding the lower notes, and the shorter ones the higher notes. All the other instruments are played upon by muffled or unmuffled hammers, varying in size, except the biola, which is played upon by a bow.

The biola leads off and gives the tune. Music notes are never read from, everything is played from memory. Wind instruments are not used. A band generally consists of from 10 to 12 musicians, and on the whole the music is not unmelodious, but when heard for any great length of time it becomes rather monotonous. Such a band is called a *gamelang*, and without it no festivity is complete. The greater the festivity the longer the gamelang has to play, and at marriages it performs generally for three days and nights in succession, with but short intervals.

s. *Theatrical performance.*—The *wayang*, or theatrical performance, is a very favourite amusement. In the portal of a house, reaching from wall to wall, a large cloth is spread, behind which, at a reasonable distance, a lamp is placed. The artist who performs has a legion of finely cut flat wooden figures of the most grotesque forms, each of them armed with a sharp point at the bottom, with which it may be stuck into the stem of the pisang (banana) tree, that keeps the cloth down at the bottom. He moves the figures so that their shadows fall upon the cloth, and alters his voice to suit the characters of the performing figures. A peculiarly shaped figure, somewhat resembling a fir tree, is used to represent either a mountain, a tree, or a middle partition, as occasion may require.

All the pieces represented are historical dramas taken from the ancient and legendary history of Java. The houses being always open, a crowd generally gathers to witness the performance from the wrong side; and whenever any peculiarly striking or well-performed passage occurs, their applause will mix with that of the spectators inside, without anybody thinking this too much liberty.

t. *Other amusements, sports, &c.*—A very popular amusement is the bull-fight, on which often large sums are waged, but only by the owners of the contending beasts. Cock-fighting also is very popular; for this purpose the cocks are armed with long and sharp steel spurs. Crickets are also set to fight each other for the amusement of the people. A less common but always much enjoyed amusement is the fight of a tiger with a bull, which takes place within a strong bamboo enclosure, and in which the bull almost always gains the victory, the tiger often being too much frightened by the noise and by the sight of the people around him to be able to fight with any chance of success.

The Javanese are also very fond of gambling. In consequence of this tendency they often run into debt and then have to borrow money, for which the Chinese shopkeepers and moneylenders will take their labour in return. Chinese tradesmen are daily seen vending their wares from house to house, shaking their little rattledrums, and being followed by one or more Javanese carrying heavy loads of goods for their temporary master. A good many days the impoverished gambler will thus have to follow the well-dressed and clean-shaved Chinaman before he has regained by the sweat of his brow the money lost through one hour's gambling. Yet only very few grow wiser by the lesson.

Hunting.—Most of the Javanese princes and grandees are passionately fond of hunting, especially deer hunting. In the extensive forests and thickets of the interior of Java stags

abound, and to make these leave their retreats and to attract them towards the plains, the long grass or *alang alang* with which these plains are overgrown, is burnt off about a fortnight prior to the day appointed for the hunt. A very few days will suffice for the young grass to spring up again, and the deer then come out of the woods during the night to graze upon the plains. As soon as it has been ascertained that they are doing this, a number of sportsmen, often as many as forty, all of noble descent, gather together, and, placing themselves at about equal distances around the plain, they drive several buffaloes into the thickets to frighten out the deer, which the hounds then pursue, and try to drive towards their masters who lie in wait mounted on spirited horses of Persian or Arabian origin, and armed only with a short and sharp, slightly curved sword, with which they have to pierce the deer. [This is fine sport indeed.] The horses seem to be imbued with the same passion as their masters, for they literally fly along, through thorn-bushes, over hedges and brooks, making light of any obstacles, and never resting until the stag is pierced. But accidents of a serious and often fatal nature are by no means rare. Yet this rather adds to the charms of the sport, at least in the estimation of the true Javanese, whose religious conviction tells him that he will not die before his time.

u. *Religion and superstitions.*—The Javanese mind is full of superstitions. The Brahminical religion appears to have existed in Java from very ancient times, and to have been followed by Buddhism, such as it now exists at Balli and Lombok. The number of ancient temples now in ruins, built of huge blocks of stone, and most elaborately sculptured, and among which those of Brambanan and of Boro Bodor are the most noteworthy, denote the existence of a civilisation at a very early period in history, far beyond that of the Javanese of the present day. Other ruins exist of smaller temples, such as those of Djabang, near Probolinggo, which are built of bricks or tiles, without any trace of mortar. These appear to belong to a more recent period. In the fifteenth century the Mahomedan religion superseded Buddhism, and up to the present day the Javanese and Malays are Mahometans, at least in name. Sometimes, especially when incited by the priests, they become bigoted and enthusiastic; but as a rule their mind is bare of true religious feeling. At odd times a few such enthusiasts may be observed singing and praying in the porch of a *messigit* (mosquee) for the greater part of a night, but these are generally preparing for a pilgrimage to Mekka, or some less distant place, in order, on their return, to be ordained as priests, when they may wear turbans, and will commence a life of idleness, doing nothing, except

perhaps, inciting the populace to revolt, or to make *amokh*, and living like leeches, on the toil of their fellow men. But by far the greater part of the Javanese have no really religious feeling. They are naturally of a kind, peaceful, hospitable, and confiding disposition, full of reverence for their princes and native rulers. They look upon religion as a kind of custom, a *hadat*, as they call it, and they have as a rule no idea of a soul-stirring influence governing a man's actions. They like to enjoy the liberty of Islam, to marry more wives than one, but of the duty of abstaining from wines and spirits they think very lightly; yet it must be said they never drink to excess. They call upon "Allah," as being the only true God, of whom Mahomet is the prophet, yet there is hardly a being in the animal kingdom, or an object in nature, but in some parts of Java there are some people who either directly worship it, or ascribe to it some supernatural influence. The tiger, the cow, the monkey, the beautiful *waringgin tree*, and the stone image of antiquity, as well as the spirits of the mountains, are all worshipped, feared, or revered, as the case may be.

There is an island at the mouth of the Juana river inhabited by sacred (!) monkeys, who are regularly fed and periodically worshipped by the natives of the neighbourhood.

There is a steep cliff on the south coast of Java, in the crevices of which edible birds' nests are found. To reach these a perilous descent has to be made by means of ropes, and no native dares to go down these ropes without first propitiating the guardian goddess of the place with some offering or other.

In a field at Batavia, there was an old piece of cannon laid, which had served at the siege of Palembang; and this cannon was daily worshipped by numbers of persons of both sexes, who brought fruit, coppers, rice, and especially miniature sunshades, as offerings; these they stuck into the ground round about the cannon deity. To this gun was ascribed the power of curing sterility, and to receive its benefits the worshipper had to sit astride it for some time. At any time of the day you might see some of these women, attired in their very best, and adorned with flowers, sometimes two at a time, sitting on this gun; and this practice was continued for years, to the benefit of the priests, who pocketed the coppers, manufactured the sunshades, and sold them at a good profit. At last this cannon was removed by order of the Colonial Government, to the great dismay of the hadjees, but without injuriously affecting the increase of the population.

With regard to their religious feeling, it has been often said that but little good has as yet resulted from the missionary labours among these natives. This is true enough, but instead of ascribing it to the incapability of the Javanese for receiving

Christian truths, I would rather ascribe it to the very small number of really earnest and really competent missionaries, and to the uncultivated state of the Javanese mind at the present day. The next generation, better instructed, and not so thoroughly unfitted for religious thought by Mahometan licentiousness, will, I have no doubt, show better results. The bad example given them by European Christians, may be regarded as one very great deterrent from their embracing the Christian faith.

Circumcision is practised by the Javanese, and is generally made the occasion of great festivities. The hero or heroes of the day are then gaudily dressed and ornamented with bracelets, necklaces, and flowers, and have their arms, hands, and faces painted yellow. They are paraded in a carriage, behind which follow the family and friends, sometimes also in a carriage, but generally on foot; and a gamelang always accompanies the procession, a heavy gong going either in front, or in the rear, and a crowd always gathers, and partly follows the procession.

v. *Marriages.*—The ceremony of marriage is performed with much the same outward show and processions as that of circumcision. Now-a-days the bridegroom and bride, as well as some of the family, are often seen in a carriage; but the good old Javanese way is for them to be seated on horseback, riding side by side to the place of wedding, both dressed alike, with bare arms, and painted yellow, as in the case of circumcision; both ornamented with flowers, bracelets, and jewellery, so that it is difficult to distinguish the bridegroom from the bride. The gamelang accompanies the procession, and plays as long as the festivities last. The bride has to undergo a series of very trying ceremonies. She has to sit still, without moving, for a very long time, dressed up as a doll, to be stared at by the multitude of guests and visitors; and she is in reality sold by her parents, sometimes seeing her intended husband for the first time on the wedding day; sometimes being betrothed long before her tenth year. Little boys and girls are sometimes so married or betrothed before they can take care of themselves, and of course they separate after the ceremony, and return to their parents' homes.

Betel chewing and teeth filing.—As soon as a girl is married, she has her teeth made smooth by filing, and commences to chew *sirih*. The sirih is a creeper plant, resembling the convolvulus, and is cultivated in gardens. Every morning immense quantities of fresh young leaves are brought to market, and sold at every refreshment stall. Three or four of these leaves are taken together; a little lime, a piece of gambier, and a quarter of a betel or penang nut are folded up in them, after which the whole is

put into the mouth. After a while, when it has been ascertained that the spittle has assumed a vermilion colour, a pinch of finely-cut tobacco is rubbed once or twice over the front teeth, and then also put into the mouth. The Javanese, especially the males, are fond of taking the quid of tobacco between the lips, in front of the teeth, showing it partly protruding out of their mouths, whilst the sirih itself is lodged behind their double teeth. When a Javanese sits down on his haunches, chewing his quid in the manner described, he presents a very stupid, and, to European eyes, ridiculous appearance. Of course he cannot very well join in any conversation with this encumbrance between his lips, so the only words he utters are monosyllables. The use of the sirih turns the teeth quite black, and so a woman with black, smooth-filed teeth, may at once be recognised as either a married woman or a widow. Polygamy is allowed, and practised by the wealthy: bigamy is not uncommon, yet the majority of people have only one wife. They are very jealous, and often such jealousy leads to their making amokh (committing wholesale murder).

w. *Good workmen.*—As a rule, the Javanese are good workmen, and although they have not the ardour of the European working man at the outset, but commence work in a slow, almost lazy sort of way, yet as they keep on working incessantly, like a machine, never leaving off to rest or breathe, they do more work than any European in that hot climate can accomplish. In the art of making *kreeses* or daggers they excel, as well as in boat-building.

x. *Proas and Canoes.*—No nation in the world can beat the Javanese for fine models for boats and canoes. Their fishing boats are as swift as birds, shallow, like rafts, and sharp, like clippers; broad in the beam, fitted with two masts, and able to carry from twenty to thirty men, besides their gear, netting, and cargo of fish. They are timbered and planked, have raised stem and stern, like gondolas, and are painted white, with a mixture of lime and rock-oil. The smaller boats, as well as the canoes, which consist only of trees hollowed out and fashioned, are furnished with out-riggers; for the spread of their canvas is enormous, compared with the size of the boat. The sails are of triangular form, resembling the lateen sails of the Mediterranean Sea. The larger proas are but clumsy compromises, between the European and Malay build and rig.

The Javanese carry on an extensive coasting fishery, and it is a pleasant sight to see all these boats proceed to sea with the landbreeze in the very early morning, and return with the fresh seabreeze in the afternoon, when the pressure upon their sails is often such, that in order to carry on, they have to rig out a plank

to windward, upon which one, two, or sometimes three men are standing, in order to prevent the water from coming over the lee gunwale. The boats are often gaily ornamented with streamers, and beads and flowers at their stems and sterns. In fishing, the nets are spread in a circle; and when half has been let down into the sea, a man descends with it into the water, which, as soon as the circle is completed, he commences to belabour with two pieces of bamboo. The fish, previously attracted to the spot by the throwing of bait (by a man stationed at the masthead), then disperse, and are entangled in the meshes of the net, after which both net and man are hauled on board.

y. *Weapons.*—The only native weapons now in use by the Javanese are the kreeses or daggers. The nations round about, in their wars, used bows and arrows, long lances, and klewangs, or short and broad swords, and there is no doubt that these also were used by the Javanese before their subjection to European rule. The kreeses are not polished, but dipped in lime-juice or other acid matter, which brings out the grain of the steel; and according to the more or less graceful flaming of the grain, the value of the kreese is enhanced or diminished. Their hilts are often finely carved and set with jewels, and the scabbards are either of wood, of brass, or even of gold, according to the means of their owners. Even if not poisoned, as they sometimes are, these weapons are very dangerous, because of their rough surfaces. But they are hardly ever used except as an ornament, or in case of emergency, which, however, seldom occurs. A kreese which has pierced a tiger, becomes an object of fond attachment to its owner. The Javanese kreeses are generally about 7 thumbs, or inches long; those of Bally measure from 10 to 11 thumbs.

The Ballinese lances are from 15 to 18 feet long, with steel points, often of snake form and dipped in poison. They are thrown with extraordinary precision and great force, as if they were mere javelins, and the points are just long enough to pierce an enemy right through. Their bows are of hard, tough wood, also of fresh bamboo, and about 4 or 5 feet long. The arrows have bamboo or steel points, often poisoned, and resembling the lance-points. The *Klewangs* are also often poisoned. In the Ballinese wars of 1847 to 1849, the Ballinese and their kinsmen from Lombok had only flints to their muskets, and were but imperfectly acquainted with their use. It was said they looked away from the muzzle when they fired. They had, however, a good supply of powder and shot.

z. *Medicines and Poisons.*—The Javanese women are generally well acquainted with the mixing and administering of poisons. Let their victim be ever so much on his guard, if he does not

actually leave the country, he cannot escape his fate. Some poisons act on the brain only, and render the victim mad. Some very clever native doctors also exist in Java, who have often healed cases where the skill of European medical men fell short. This has been fully recognised by the Colonial and Home Governments, and schools have been founded for the instruction of natives in European pharmacy and medical science; whilst many valuable remedies have been acquired from Javanese sources, among which may be named a remedy against tape-worm. The natives have a simple remedy for less serious cases, consisting in getting all their limbs stretched and folded, so as to regain the necessary pliability. Every finger is then made to crack, every joint is drawn out; and often they have their backs rubbed with the edge of a porcelain cup or bowl, until the skin looks quite red and inflamed: this supplying the place of our Spanish fly.

Conclusion.—A good deal of adverse criticism has often been applied to the manner in which the colony is governed by the Dutch; but, as a rule, those who know Java best, criticise least of all. Mr. Wallace, from whose work, the "Malay Archipelago," I have quoted a few figures, is of opinion that it is the best governed colony in the world. Many eminent men agree with him. And indeed, if his test of increased population be applied, we shall arrive at a like result.

There is, however, no doubt that abuses have existed, and that some abuses still do exist. The system of paying taxes, not in money but in labour, which worked so well at its first introduction, is no longer tenable, and is being gradually abolished. Of a system of oppression practised by the Dutch towards the natives, there is no proof whatever. The quietness of the island proves that it does not exist. From one end of Java to the other, the European traveller may go without carrying as much as a pistol with him. Bolts and bars are things unknown in Java, yet robberies and thefts are the exception.

The labourer in the sugar fields is entirely free to work or no, and to demand his own price for his labour. The forced labour which will most likely remain in use, is that of watering the streets twice a-day, a most salutary custom. All the other forced labour is gradually giving way to a system of taxation in money, for which the tax-taking Government provides good roads, good bridges, telegraphs, police, and all other blessings of civilised life.

To the anthropologist Java presents a rich field for research, probably the richest in the world.

DISCUSSION.

Dr. CAMPBELL, R.N., said he considered the age referred to of *maternity* to be too low, though it might be correct to say the women did sometimes *marry* as young as stated. It is generally admitted that conception does not take place till after the appearance of the menses; and from statistics he collected with reference to a neighbouring country ("Edin. Med. Journal," 1862), such would seldom occur before 11½ years.

In describing the propagation of trees by slips, the author had omitted to state that the first act of the process is to remove a narrow circular part of the bark of the branch over which the soil is attached, and that generally the mass is regularly watered for a time, either by hand or any contrivance permitting a drop falling occasionally on it.

The PRESIDENT also made some observations on the paper, and the Director then read the following paper, in the absence of the author:—

The ETHNOLOGY *of* GERMANY. Part I. *The* SAXONS *of* NETHER SAXONY. By H. H. HOWORTH.

AT the accession of Charlemagne the Franks were masters of all Germany, except that portion inhabited by their old and inveterate enemies the Saxons. For 300 years this sister confederacy, which had remained free from the Roman yoke, and free also from Christian influences, had carried on an almost ceaseless and, very often, aggressive war against the Franks; and it was only the persevering effort of the greal Karl himself that eventually crushed and incorporated the Saxons.

The Saxon country south of the Elbe, at this time comprised the three provinces of Westphalia, Engern, and Ostphalia. It was bounded on the west by a series of Frankish gaus which separated it from the Rhine and from Lake Flevo; and its boundaries may be admirably studied in the 3rd map of the series Germany in Spruner's new Atlas. Let us now limit ourselves, for a short time, to Westphalia, which was, apparently, not an old possession of the Saxons, but one which they conquered from the Franks.

The western boundary of Westphalia followed almost in detail the present western boundary of the Prussian provinces of Westphalia and Hanover. It was separated from the North Sea by certain Friesian gaus, now forming part of Hanover and Oldenburgh. On the east it was bounded by the Hunte, a tributary of the Weser as far as its sources, and thence roughly by the present boundary of Westphalia, with whose southern limits it was also more or less conterminous. It was therefore watered by the Ems, the Lippe, and the Ruhr.

The name Westphalia does not appear, so far as I know, before Carlovingian times. Its etymology has been analysed by Zeuss, who tells us Falah, with the termination ah, is derived from Fal, *i.e.*, plain or field, and is the same as the Slavic poliak or polian, whence Poland and Poloutsi, and Rubruquis and others give us Valwae or Valania as the equivalent of Poloutzia. There was a gau in Ostphalia called Falaha, and we are told that the Gau Leri was in the Duchy of Falhorn (Zeuss "Die Deutsche," &c., 390, note). Westphalia, therefore, merely means the western plains as distinguished from Ostphalia, the eastern plains, the two districts being separated by the intermediate Angraria or Engern. The name, therefore, has no ethnological import. As I have said, Westphalia was not an old Saxon land, but a conquest, and the people who were ejected were the Bructeri, or Boruktuarii, a famous old stock of the Franks, and among the Frankish tribes the last to discard its distinct name.

The Bructeri gave its name to one of the Westphalian gaus, bounded on the north by the Lippe and on the south by the so-called Southwodi or Southwoods, men who were doubtless their frontagers on the side of the Franks. This gau generally referred to in the chronicles as the pagus Borahtra, Bortergo, Boroctra, &c., we are told in several authorities, comprised the towns of Castorp, Perricbeci, Holthemi, Hamarichi, Mulmhuson Ismereleke, Anadopa, Geiske, &c., situated between the Lippe and the Ruhr (Zeuss, *op. cit.* 353).

In Spruner's maps we find the Lippe given as the southern boundary of the Saxons in Merovingian and early Carlovingian times; and it would seem that Bede has preserved for us a notice of the conquest of the district to the south. He tells us that Bishop Suidbert, having left Britain, went among the Boructuarii, many of whom he converted. But not long after the Boructuarii were dispersed by the old Saxons, upon which Suidbert was given an island on the Rhine by Pepin, where he built a monastery. This island was called Werda ("Mon. Hist. Britt.," 259). Suidbert was ordained Bishop in 693, and died in 713—715 (*id.*). Dr. Latham ("English Language," 35 and 36) questions the fact of the Bructeri having been Franks, for, as he says, they were still Pagans in the 8th century, and argues that they were more Saxon than anything else, and this, too, in the face of the passage from Bede just cited, which is conclusive that they were not Saxons, while they are frequently made Franks in other accounts, Franks who lived on the Saxon march or frontier, and who were at this data probably more or less mixed, but yet Franks, and being frontier men, there was nothing very odd in their having been also Pagans.

Zeuss tells us that north of the Lippe and as far as Hamaland

there is no gau, and he infers that the Khamavi and the Bructeri were once here in contact, the latter stretching out to the north. ("Die Deutsche, &c.," 353, note.) I agree with his inference, but not for the same reason. The fact is, the area he mentions was occupied by a gau, which is defined in Spruner's Atlas, and is there called Nordgo, occupying the north-west projection of Westphalia, and bounded on two sides by the Lippe and the Issel, but it is very probable that a gau with such a name was only a recent creation. From Carlovingian times we have to make a great leap to the time of the Classical authors. Among these the two who give us the best information on this area are Tacitus and Ptolemy. The latter, although writing at a later date, seems, in his account of Germany, to have constructed his narrative occasionally from earlier materials. His narrative, therefore, sometimes represents not the state of things contemporaneous with him, but one older. I believe this to be notably true of the Bructeri. Tacitus tells us that the Bructeri formerly dwelt near the Tencteri. "Now," he adds, "it is reported that the Khamavi and Angrivarii have displaced them. The Bructeri being defeated and almost exterminated, with the approbation of their neighbours, either from the hatred of their pride or the delight of plundering, or the favour of our gods. For they favoured us with the spectacle of the fight, in which 40,000 perished, not by the Roman arms, but more magnificently and before our eyes" (Germania). Here, then, we have a notice of the dispersal of the Bructeri and the occupation of their land by their neighbours on either side, the Khamavi and Angrivarii; what that land was we gather from same author. Thus he says, "Cæsar * * * Cæcinam cum quadraginta cohortibus Romanis * * * per Bructeros ad flumen Amisiam mittit" ("Annales" I, 60). Again, "Ductum inde agmen ad ultimos Bructerorum, quantumque Amisiam et Lupiam amnes inter, vastatum" (*id.* I, 60). These passages clearly place them in the country between the Ems and the Lippe. Ptolemy divides them into two sections. The greater and lesser Bructeri; and I have no doubt, myself, that they were in fact the original occupants of Westphalia. Hence they were thrust out by their neighbours. It is clear that the mention of their extinction by Tacitus is a gross exaggeration, and their name appears very frequently afterwards; but it is also clear that they evacuated the greater part of their original country; a larger portion, no doubt, joined their brethren, the other Franks, and passed across the Rhine, while the remainder found refuge across the Lippe in the gau which received its name from them.

Let us now consider who the immigrants were. Tacitus tells us they were the Khamavi and Angrivarii. It may be that we have

in the town of Hamm in Westphalia, which Mr. Latham considers to mark the ancient habitat of the Khamavi, some trace of one set of these immigrants. Dr. Latham's words are: "The present town of Hamm, in Westphalia, probably preserves the name and fixes the original locality of the Khamavi" ("Germania of Tacitus," 112), but this is clearly wrong; the old land of the Khamavi is no doubt Hamalant in Holland. Nor does Hamm seem to be a very old town. I cannot find it mentioned on Spruner's mediæval maps, which are so accurately and minutely drawn. And Hamm, which means merely settlement, may have as little to do with the Khamavi as Ham in Surrey. At all events, it is clear that if there were some Khamavi among those who thrust out the original Bructeri, that they did not alter either the blood or language, for both Khamavi and Bructeri were Frankish tribes.

Putting aside, then, the Khamavi and the remains of the Bructeri, we have to consider who the main body of the Westphalians are descended from, and here one must agree very cordially with Zeuss, that they are in part descended from the Friesian Khauki, who bounded the Bructeri on the north, and partly from the Angrians or Angrivarii, from the valley of the Weser. The presence of a large element of Friesians is shown by two factors, namely, the names of men and of places. In regard to the former, Zeuss has collected several examples. The great feature of Friesian names is the termination in "a." Now in some fragmentary records of the Chancery of Bishop Meinwerk, of Paderborn, 1009–1036, we find mentioned "Ekkica comes, Decanus Haica, Wermza presbiter, Ekkica comes, Geba et filii ejus, Bennaca et frater ejus Tiaza, Tiamma comes et frater ejus Esic, Benna comes et Ekkica comes et Eilbracht et Tada milites." Also in the charters of Junnodines, bishop of Paderborn, of the year 1054, we find "Godeka, Gela et frater ejus Eiza, Araka, Waza, Tamma, Hamaka," &c., &c. (Zeuss, 392).

We will now turn to the topography, which we can best study in Spruner's maps, which give the old forms of the names. Here again the termination in "a" is a characteristic Friesic one, and we have numbers of names with that ending scattered over Westphalia, as Fliedarloa, Withula, Hriasforda, Elmloa, Scagahorna, Anadopa, Werla, Bracla, Sitnia, Alladna, Frethenna. It seems clear, therefore, that there was a considerable sprinkling of Friesians among the elements which went to make up the Westphalians, and Zeuss identifies it with the Khauki. The remaining element which greatly preponderated was the Angrian. We have a numerous series of names ending in "husun," which is such a favourite termination in the Weser valley, as for example, Wihaldeshusen, Alfhuson, Bovinkhusun, Sevinhuson,

Stohchusun, Folkgeldinghuson, Hoianhusun, Bennenhusen, Mulinhuson, Ludinchusun.

I may add that a district of Southern Westphalia is called Hengaren, or Angeron, in Spruner's map, and is probably connected with the Angrian immigrants. These names, when compared with those found in the valley of the Weser, or Weserthal, the old land of the Angrians, makes it very probable that Westphalia was largely re-peopled by emigrants from that district, when its old inhabitants the Bructeri left it. That Engern was the real centre and focus of the later Saxon land, we may also conclude from the fact that all the important Saxon strongholds and fortresses, such as Ehresburgh, were there. There, too, was the homeland of Witikind, if we are to believe the inscription on his tomb in Engern, which tells us he ruled in Angria, in 785 ("Hampson's Geography of King Alfred, '26"). My conclusion, therefore, in regard to the origin of the old Westphali is, that when the Bructeri were ejected or retired from the district, it was overrun and peopled by emigrants from Friesia and from Engern. Let us now turn to the latter province.

Engern, or Angraria, which formed the central division of Old Saxony, included the country watered by the Weser and its tributaries, from Fulda to its mouth. On the north-east it was bounded by the Elbe; on the east, by Ostphalia; on the west, by Westphalia; on the north, by the Friesians; and on the south, by Thuringia, and the land of the Franks. The district has borne the name in various forms, as Engern, Angaria, Angraria pagus Angeri, from very early times. It was divided into two parts, by the Weser "Ostengern, or Angeri, in orientali regione;" and "Westengern, or Angeri, in occidentali regione" (Zeuss, 391). Grimm tells us that south-west of Minden, and not far from Herford, there is a small village, called Enger, or Angeri, which was probably the chief town of Engern, and the very kernel of all Saxonia (Grimm, *op. cit.*, 438). It is not unlikely that the province took its name from this town, which is the supposed site of the defeat of Varus (Latham's "Germania," 113). It is more certain that the province gave its name to the inhabitants, who are called Angarii, by the Poeta Saxo, in the year 772 (Zeuss, 391). But the name is much older than Carlovingian times, and occurs in the authors of Roman days, under the form Angrivarii, *i.e.*, Engernware (like Cantware, &c.), the men of Engern; and Tacitus mentions them both in his "Annals," and in the "Germania;" and as Tacitus does not name the Saxons at all, while Ptolemy mentions them as living beyond the Elbe, it seems clear that in the Angarii, or men of Angern, we have a proof that one of the factors which went to make up the old Saxons was present in its later habitat long before the Saxon

confederacy was formed. It is not only the Angarii to which this remark applies, we shall find it is equally true of the Ostphali, to whom we must now turn.

The name Ostphali, like Westphali, is of late date. It also occurs for the first time in Carlovingian times, and in the narrative of the Poeta Saxo, in 772. They were also called Austreleudi ("Annales Laurrisenses," Pertz I, 154; Zeuss, 389). The name Ostphali is the correlative of Westphali. It corresponds, as Dr. Latham has said, to the English Essex, as distinguished from the English Wessex, Engern answering to the intermediate county of Middlesex.

Ostfala was bounded on the north and east by the Elbe; on the south by Thuringia, and on the west by Engern. It formed the buttress of the Saxon land against the Slavic nations on the east. We have here a corner so enclosed by the Angrivarii, that it is hardly likely that there has been a great displacement of race in the one area and not in the other; and as we have seen, the people of Engern still occupy the land of their forefathers, so we may conclude that probably the Ostphali do also. Zeuss says that they are undoubtedly descended from the Kheruski, so famous in Roman history, as the subjects of Arminius (Zeuss, 391). This view seems very reasonable. Thus Tacitus speaks of them as the neighbours of the Angrivarii. Thus, also, in his account of the campaign of Germanicus against the Kheruski, he tells us the latter were posted in front of a thick wood, backed by a marsh, one side of which was enclosed by a rampart, which had formerly been thrown up by the Angrivarians, as a barrier between themselves and the Kheruski, "latus meum Angrivarii lato aggere extulerant, quo a Kheruskis dirimerentur" ("Annales" II, 119; Zeuss, 107). The site of this battle it has been supposed is on the right bank of the Weser, and the wood to be the so-called Schaumburger, in the principality of Schaumburgh Lippe ("Murphy's Tacitus," I, 394). This wood was formerly called Scapevelden, see Spruner's map of the German Gaus, 3. If this be the true site, then we must conclude that the boundaries of the Angrivarii and the Kheruski were by no means those of the later Saxon provinces of Westphalia and Angaria, for this is in the very heart of Engern. But it would appear that the name Kheruski was used frequently in a generic sense, and that the Angrivarii and Kheruskans were very closely allied, and both of them subject to Ariminius. At all events the great campaign, of which the battle just quoted was only an incident, no doubt took place in the neighbourhood of Minden, and the site of a second battle, which Tacitus fixes at a place called the Idistavisian valley, has been identified by La Bletterie, d'Anville and others, with a place now called Hasten-

bech, near Hameln, east of the Weser. While the great defeat of Varus, a few years before, was close by, as I have said, on the other side of the river, and these sites are in the very heart of Engern. Again, Tacitus unmistakably makes the Angrivarii close neighbours of the Khauki, and tells us how they returned a considerable number of captives, whom they had ransomed from their maritime neighbours ("Annales," II, 15).

On turning to another passage in the "Germania," we find him speaking of the Tracti ruina Kheruskorum et Fosi contermina gens, adversarum rerum ex æquo socii ("Germania," Latham's edition, 129). Both Zeuss and Grimm connect these Fosi with the river Fuse, a tributary of the Aler, which falls into that river at Celle, just on the borders of Engern and Ostfalen, and they were therefore frontages of both the Angrivarii and the Kheruski, the latter being to the south of them. So that we have the Kheruski bounded on the north by the Angrivarii and the Fosi. Now on turning to the map, we find that the southern part of Engern and of Ostfalen, answering to this description, coincides with the mountainous district of Brunswick, and notably with the well known Hartz mountains, the ancient frontier of the Thuringians and Saxons. Hertz or Hartz, or Hart, for all three are forms of one word, means merely wood, or forest, and we have a gau immediately north of the Hertz, which is called Hardago; while further west, but still in this mountain district, and in the gau of Hassia, we have the district of Hersi. These names point to a connection with the etymology of the name Kheruski. Grimm says Kherusk is connected with a sword and a sword god. He tells us that Kheru is the Frank form of the old Saxon heru; the Gothic, hairus, Anglo-Saxon, heoro, Norse hiorr; and he connects it with the Lithuanian kardas, and the Gypsey Kharo, all of which mean a sword. He tells us the termination sk is merely a personal one, and compares mannisks, formed from manna, and thiudisks, from thiuda, and concludes that in Gothic, hairvisks would mean swordly, and would make out that it was derived from a sword god, Hairus; or from the god of war, Ero, or Er, the eponymos of the Heruli. This derivation fits in with Grimm's theory, that the name Saxon is derived from seax, a knife, and that the Saxons are descended from the Kheruski; but as the latter conclusion is entirely mistaken, so I believe is this tempting etymology a very unsound one, and that Kheruski means merely the woodmen, and is as much and no more a proper name than our backwoodsmen. The view of Grimm and his school has been combated with skill and learning in a pamphlet by Mosler, entitled "De primordis Francorum," published at Dusseldorf, in 1857. As he says, Ptolemy, who is the only one of the early classic authors who mentions the Saxons,

places them north of the Elbe, and not only so, but he also names the Kheruski as a separate people, and locates the two tribes far asunder. This is absolutely conclusive, for on such a point it would be mere wantonness to reject the testimony of Ptolemy. Nor does the description of the Kheruski at all suit what we know of the Saxons; they were not "boni æquique," nor "inertes ac stulti," like the Kheruski (*op. cit.*, 12). Mosler adds that according to the laws of etymology, the name Kheruski is connected with hart, harc, haruc, or haruz, wood, as it has been accustomed to connect it, and not from heru, a sword, and the god of swords, as Grimm argues; and with Ledebur, he connects the name with the Harz (*id.*, 13). The name Kheruski, therefore, is an appellative, and not a proper name, and it was, perhaps, not indigenous with the tribe, but given it by its neighbours. The indigenous name was probably Angarii, or Angrivarii, which probably connoted the same people. We thus have the Ostphali and Westphali as outliers of the central kernel of Engern, and a very great probability that a homogeneous race, as there is a homogeneous dialect, occupying the broad area of old Saxony. And it is easy to see how the specific and local name Kheruski, as the name Highlanders, Poloutsi, or Lowlanders, became generic in some writers. Angrivarii and Kheruski and Fosi being merely local designations, and not denoting any differences of race, language, or custom. The name which for the time being was most famous, gave its name to the whole confederacy or bund, and thus we have no difficulty in understanding how the Kheruski are at one time said to have bordered on both the Katti and the Khauki, a statement quite inconsistent with others, if we do not give the name Kheruski a greater extension.

As I have said, Grimm's theory about Saxon being a new name for the old Kheruski, will not hold water at all; but one may go further, not only do the names denote different tribes, but also tribes who are only distantly connected, and which belong to distinct sections of the German race. The following list of Kheruskan chiefs' names has no resemblance to the names of Saxons, Segestes, Segimer, Inguiomer, Actumer, Segumund, Thusnelda, Aritrampius, Thumelic, Sesithac, Flavus, Rhamis, Italicus, Chariomer (Grimm, *op. cit.*, 428). These names have interesting affinities, but they are far other than Saxon. When we come down to Carlovingian times, things are different. We then meet with such names as Egbert, Witikind, Osmund, names which might have been culled from the "Anglo Saxon Chronicle," and which are purely Saxon.

Again, the earliest notices of the Saxons in the Roman authors, make them a seafaring people, who attacked not the interior of

Germany, but the coasts of Gaul and of Britain, showing that they could not well have come from the internal parts of North Germany, the old Saxon land; and those who have preserved for us the traditions of the conquest of England by the Saxons, similarly bring them not from old Saxony, but from the country about the Lower Elbe.

If we turn from these to the native traditions of old Saxony, as preserved for us by the monks of Corvey, and to which they gave full credit, as Lappenberg says, we shall find them exceedingly interesting, as illustrating our position. They tell us that Saxons having come to their neighbourhood in ships, and first landing in Hadeln, drove the Thuringians thence by craft and violence. I will quote Lappenberg's commentary on this. He says Wittekind does not inform us whence these Saxons came who landed in Hadeln, and there is no ground for controverting, but, in accordance with other narratives and with the ordinary march of nations from north to south, for supposing that they were from the north shore of the Elbe, or Nordalbingian Saxons, who took possession of the southern shore of that river, and soon spread themselves over those tracts as far as the Weser and the Rhine, until, in the time of Charlemagne, they were in possession of the territory forming the eight bishoprics founded by him, or of the gaus or districts of the later Upper and Lower Saxony and Westphalia. In the account which makes the Saxons to have passed from Britain to Hadeln, a later inversion of the tradition is to be recognised, originating, perhaps, in the return of some bodies of Saxons from England (Lappenberg's "Anglo-Saxons," I, 87 and 88). Again, we find in the heart of Westphalia, near Frekkenhorst, a place called Sassenberg, Latham's "English Language," 66, *i.e*, the Saxon mountain. Is it probable that such a name would have been given to a site in the midst of an old Saxon country, or does it not rather, like insular names elsewhere, mark a colony of Saxons in the midst of strangers?

All these facts point in the same direction, namely, that the Saxons were not the old indigenes, but a race of invaders, as much invaders in old Saxony as in Britain, except that in the one case they occupied a country peopled by a different race, while in the other, the race was more or less allied. But these *à priori* arguments are reduced to certainty when we examine the question from another side, and apply the method which was first applied so successfully by Kemble, and in later times by Mr. Isaac Taylor, namely, examine the topography of the country. The great distinguishing feature of Saxon topography as we meet with it in England and elsewhere, is the presence of the patronymic ending in ing. Ing was the usual Anglo-

Saxon patronymic, says Mr. Taylor, and thus we read in the "Anglo-Saxon Chronicle," A.D. 547. Ida was Eopping. Eoppa was Esing. Esa was Inguing. Ingui Angenwiting, *i.e.*, Ida was Eoppa's son, Eoppa was Esa's son, Esa was Ingwy's son, Ingwy Angenwit's son. In fact, the suffix ing in the names of persons had very much the same significance as the prefix Mac in Scotland, O in Ireland, or Beni among the Arabs. A whole clan or tribe claiming to be descended from a real or mythic progenitor, or a body of adventurers attaching themselves to the standard of some chief, were thus distinguished by a common patronymic or clan name ("Words and Places," 133). "The Saxon immigration was, doubtless, an immigration of clans, the head of the family built or bought a ship, and embarked in it with his children, his freedmen, and his neighbours, and established a family colony on any shore to which the winds might carry him" (*id.*). "These family settlements are denoted by the syllable ing." Now, although this use of the patronymic ing is not confined to the Saxons, it is comparatively rare among other German tribes, and seems to have been introduced elsewhere by them or by their relatives. We accordingly find an immense development of names so compounded in England. Kemble mentions 1,329 English names with this root, but Mr. Taylor thinks the total number might be raised to 2,200, as he has noted many omissions in Kemble's lists (*id.*, 132, note 3). With these preliminary remarks, let me draw attention to a passage of Mr. Taylor's, who, arguing from entirely independent premises, and with other objects in view, so singularly confirms the view here argued for. He says: "It has been generally assumed that the original home of the Saxons is to be sought in the modern kingdom of Hanover, between the mouths of the Elbe and the Weser. I have made a careful search in this region for names identical or analogous with those which are found in Saxon England. In Westphalia, a small group of patronymics was discovered (*vide infra*). But, on the whole, the *investigation was remarkably barren of results; the names for the most part proving to be of an altogether dissimilar type*," *&c., &c.*

In an appendix, Mr. Taylor gives a list of the small groups of these patronymics which he found in Westphalia and its neighbourhood, which I abstract: Oevinghausen, Erflinghausen, Oelinghausen, Imminghausen, Uninghausen, Eppingkofen, Ebbinghausen, Erringhausen, Assinghausen, Biggingh ausen, Betinghof, Betlinghausen, Böinghausen, Billinghausen, Benninghausen, Berlinghausen, Berninghausen, Beisinghausen, Keddinghausen, Köttinghausen, Kellinghausen, Gellinghausen, Gerlinghausen, Körtlinghausen, Dedinghausen, Dudinghausen,

Frilinghausen, Heddinghausen, Hellinghausen, Hemminghausen, Henninghausen, Heringhausen, Lutringhausen, Leveringhausen, Löllinghausen, Mecklinghausen, Millinghausen, Messinghausen, Nichtinghausen, Puttlingen, Recklinghausen, Rödinghausen, Ratlinghausen, Rielingshausen, Rellinghausen, Siedlinghausen, Weckinghausen, Vellinghausen, Waltringhausen, Wissinghausen, Oestinghausen. These are all the names which Mr. Isaac Taylor could find to compare with the Saxon patronymics of England in the wide country of Nether-Saxony, hardly a tithe of the similar names found in the small district of Artois alone. I have been over Spruner's map of the Saxon gaus, and could add a few more to this list, but only a few. Not only are such names scarce, but they are distributed very sporadically, the greatest number, as might be expected, from the course of migration, being found in the northern portion of Engernand, in Westphalia, but they are a mere handful compared with the crowds of names of an entirely different character, and not only so, but here the patronymic very often occurs not in its virgin form, but corrupted. Eddink, Rikilden, Bodinc, Hadden, &c., even in the old forms on Spruner's maps, while the particles they are compounded with are not the familiar ton and ham of the Saxons, but nearly always the German Husen or Hausen. These facts are conclusive that the Saxons who left these names behind were not the indigenous stock of the country to whom it owes the greater part of its topographical nomenclature, but a race of invaders who planted themselves here and there, like the Danes did afterwards; who became the aristocracy of the country, and gave it its name, and that the people of old Saxony were, in later times, as much entitled to the name of Saxons as the people of Normandy to that of Norsemen, and no more. This conclusion is a valuable one for other reasons than those merely ethnological, and helps to explain some difficulties. Thus, it has always been a puzzle to make out why if the old Saxons and the Saxons of England were, in fact, the same race, how it is that their dialects were so different when we compare the earliest monuments of either? Why, for instance, King Alfred's "Pastoral Care" should be so different to the "Heliand?" Different not merely in the few words which the English Saxon borrowed from the Britons, or from Latin, but also in the forms of many words and phrases entirely Teutonic, and in which the continental Saxon approaches the other German dialects. Thus, Dr. Bosworth, in his very valuable work on the "Origin of German and Scandinavian Languages, &c.," page 75, after having before shown that the Friesic dialects are the most allied to the English form of Saxon, goes on to say, "Low Saxon has all the appearance of German

grafted on an Anglo-Friesic tree. The words are Anglo-Friesic with German vowels, as if the Friesians, in adopting the German, retained the consonants of the old language. This observation may, with still greater propriety, be applied to the syntax and phraseology, that is, to the mental part or soul of the language. They continued to think in Anglo-Friesic forms, while their organs adopted the vowels and some other mechanical parts of the German."

This testimony is not the less valuable because Dr. Bosworth was not writing in support of the view here advocated, but held very different views. He believed the old Saxons and the English Saxons to have been the same race, and speaks of the latter having written and matured their language in England: hence, he says, it differs from the tongue of their continental ancestors (*id.*, 81). In the language of the old Saxons, therefore, we have ample evidence by itself of the ingrafting of the Saxon language proper upon an old indigenous dialect, and a proof that the old Saxons are a mixed race. The linguistic evidence, in fact, points to much the same result as that of the Norman conquest of England, when the language was so greatly modified, only that in the case of the old Saxons it was not the grafting of an entirely foreign tongue, like the Romance of the Normans upon the Teutonic Anglo-Saxon, but that of one German dialect on another.

As yet we have considered only the three divisions of the Saxons south of the Elbe. Let us now cross that river. In doing so, if we enter Holstein we shall be in another old Saxon locality. In Carlovingian times the Elbe divided the Saxons into two great branches, and those to the north of it were called the Nordalbingians or Nord Liudi. Like the Saxons south of the Elbe, they also fell into three divisions, namely, the Thiatmarsgi or Thiedmarsi, the inhabitants of Ditmarsh, the Holsati, Holzati or Holsatas, from whom the present Duchy of Holstein takes its name, and the Stormarii or people of Stormar, of whom Hamburgh was the capital (Latham's "English Language," 33). It has been very generally supposed that in these Nord Albingian Saxons we have undoubted descendants of the same ancestors as our English Saxons. I believe this to be an entirely mistaken view, and that these Saxons north of the Elbe were as much, and no more, Saxons than those of old Saxony, that they were in fact a colony from the south. This appears from several considerations. In the first place the language is the same. Here as in old Saxony we have Platt Deutsch spoken, and not Saxon proper; and in fact the purest Platt Deutsch is spoken in Holstein and Schleswig. Secondly, the topographical evidence adduced from Mr. Isaac Taylor as to the distribution

Saxon patronymics in old Saxony south of the Elbe, applies equally to Holstein, where we have an equal scarcity of names compounded with Saxon patronymics amidst a profusion of foreign and distinct forms. Thirdly, the three names, Holsati, Dietmarsi, and Stormarii, are clearly new names in this district, and are not found in the classical authors, where the tribal nomenclature of the Danish isthmus is given in some detail. Again, the name Transalbingian applied to this section of the Saxons, is clearly the name of a separated fragment of a colony who have gone beyond the river, and is not a substantive appellation like an old settled tribe would possess. Again, we have in the north central part of Engern a gau called Sturmia, and another running along the left bank of the Weser called Steoringa, the former of which at least points to the mother country of the Sturmarii. The name Holsati or Holtsati simply means the settlers in the wood. Now this term satas or settas is an interesting one, as it generally marks elsewhere a frontier, an abandoned district, or else a conquered one on the borders of the enemy or the wilderness, and implies an immigration. Thus we have in England and along the Marches of the west the several names Dorsætas, Defnscetas, Somersætas, Magasætas, and Scrobsætas, the last marking the colonization of a district only conquered in the days of the Mercian hero Offa. On the borders of France we have the Alsætas in Alsace. While close to the very district we are now examining we have in North Engern a gau called Waldsati; and this last a very interesting case, for it apparently marks an encroachment made upon the old land of the Khauki. Thiatmarsgoi, *i.e.*, the dwellers in the gau of Thiatmars, the modern Dithmarsh, also bore a name not known to the classical authors.

That the old Saxons pushed themselves northwards as well as southwards, and thrust out the Friesian Khauki we have every reason to believe; the Khauki are put on either bank of the Weser and as far as the Elbe by the classical authors. They have been classed as Friesians by the best authors, and the buttress of old Saxons, which now separates the South Friesians from the North Friesians, was probably not there in early times, when I believe the Friesian area was continuous. Thus Dr. Latham, who is almost fanatically opposed to postulating any race-changes, says, "The evidence of the North Friesian having once been continuous with the Friesian of Friesland and Westphalia is satisfactory, the displacement of it having taken place within the historical period, and its history is to be found in that of East Friesland, Oldenburgh, Delmenhorst, and Bremen" ("Germania," 125). Again, he tells us that Friesian was spoken within the historic period in Eydersted and Ditmarsh (*id.* 124).

Whatever evidence we take, therefore, we arrive at the same conclusion, namely, that the Saxons north of the Elbe, or the Holsteiners, as we may rather call them, are not descended from the Saxons proper, but are a colony from Nether-Saxony, a colony of the same mixed race which peopled that area, and in no sense indigenes of the district where they are now found.

If I am asked where then are the descendants of the real old Saxons, I can only answer by a similar question, where are the descendants of the Lombards, of the Burgundians, of the Warini, and of the Goths? They are not to be found in their old land at all, but scattered far and wide over Europe. They migrated bodily from their old homes, and their old homes were left waste like Anglen was, which, in the words of Bede, "De eo tempore (*i.e.*, from the migration of the Angli) usque hodie manere desertus inter provincias Jutarum et Saxonum perhibetur." It was over these waste and deserted lands that the Slaves spread from the east, and the so-called old Saxons from the west. In limiting the Saxon element among the old Saxons to its upper caste and to the descendants of its conquerors, we clear away a great deal of difficulty and confusion, and we prepare ourselves to attack the problems which are connected with the ethnology of the early German races with greater effect. In another paper I hope to trace the migration of the Saxons proper in detail.

In the discussion which took place on the above—

Discussion.

Mr. Hyde Clarke congratulated the Institute that the subject of the Germanic race was being investigated with such labour and research by one who had formerly bestowed care and thought upon it. He was not, however, prepared to concur with the suggestion that the Saxons went from the south to the north. It was there was the great seat of the Suevi of Tacitus, that important division instituted by that author in the Germanic race, and which had not been sufficiently regarded. Mr. Clarke would rather look to the distinction of Suevi, than to the separate tribes as they were considered, but in reality military and political confederations of Suevi more or less permanent. English and Warings (Angli et Varini), Frisians, Saxons, Langobards, Burgundians, Goths, Rugians (? the Russian Warings of Nestor) really consisted of the same people and families. The pursuit of the subject as furnished by Mr. Howorth would bring him to this point. Mr. Clarke had in his paper, published in the "Transactions of the Ethnological Society (25th Feb., 1868) and the Institute," dealt with the history which he had discovered and established of the Warings, that remarkable people conjoined with the English (Angli et Varini). Mr. Howorth would have to recount the confirmation of the laws

of the Angli et Werrini by Charlemagne. With regard to the Frisians and their share in these migrations, Mr. Clarke would refer to his paper read on the 15th February, 1849, before the Society of Antiquaries, in rectification of the 15th chapter of the first book of Bede's "Ecclesiastical History," and of the 9th chapter of the fifth book. The Hunni of Bede were the Hunsing, one of the chief branches of the Frisians, and the Rugii were also referred to. The statement about Jutland remaining waste was also corrected. With regard to Ing he did not consider it as distinctively Saxon or as simply tribal. He had defined it as the English collective, or collective capable of admitting a singular or plural form, which was preserved to this day by the working-classes, though it had passed unrecognised by the grammarians. In considering the subject of the Suevian migrations, and particularly in reference to Britain, two routes were to be examined, one across the North Sea to Kent, the East Saxons, the East English, Bernicia and Deira, and one by Nether-Saxony and Flanders to the South Saxons, Wight, the West Saxons, and perhaps to the middle Saxons, and to Mercia.

The President made some remarks, and the meeting then separated.

JANUARY 9TH, 1877.

Colonel A. LANE FOX, F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following new member was announced: Rev. A. C. GEEKIE, of Bathurst, New South Wales.

The following presents were announced, and thanks were ordered to be returned to the respective donors for the same:

FOR THE LIBRARY.

From the SOCIETY.—Bulletin de la Société d'Anthropologie de Paris. Vol. XI, No. 3.

From the SOCIETY.—Proceedings of the Society of Antiquaries of London. Vol. VII, No. 1.

From the SOCIETY.—Bulletin de la Société Impériale des Naturalistes de Moscow. No. 2. 1876.

From the ACADEMY.—Bibliographische Berichte über die publicationen der Akademie der Wissenschaften.

From the SOCIETY.—Proceedings of the Royal Society. Vol. XXV, No. 175.

From the SOCIETY OF ARTS AND SCIENCES, BATAVIA.—Tijdschrift.

XXIII afl. 2, 3, 4; Notulen XIII, 1875, Nos. 3, 4; XIV, 1876, No. 1; Kauro Oorkonden, 1 met platen en omslag. By Dr. A. B. Cohen Stuart.

From the ACADEMY.—Bulletin de l'Académie Impériale des Sciences de St. Petersbourg. Vol. XXII, No. 3.

From the ASSOCIATION.—Proceedings of the Geologists' Association. Vol. IV, No. 9.

From the AUTHOR.—Notes on Shakspeare and Memorials of the Urban Club. By John Jeremiah, Junr.

From the EDITOR.—Revue Scientifique. Nos. 25–28.

From the EDITOR.—Nature (to date).

Mr. Henry Hyde Clarke, F.G.S., exhibited a feather dress and ornaments from the Amazon.

Mr. H. N. Moseley, Naturalist to the Challenger Expedition, then read the following paper on the Admiralty Islands:

On the INHABITANTS *of the* ADMIRALTY ISLANDS, *&c.* By H. N. MOSELEY, Fellow of Exeter College, Oxford, late Naturalist on board H.M.S. "Challenger." With Plates xx, xxi, xxii, xxiii.

THE Admiralty Islands are a group consisting of one large island and numerous small ones. The group lies between latitudes 1° 50′ and 3° 10′ S., and longitudes 146° and 148° E. It forms the north-westerly termination of the long curved chain of large islands and groups of islands which stretching roughly N.E. and S.W., is composed of the New Ireland, Solomon, and New Hebrides groups. The main island of the Admiralty group is distant from New Hanover, the nearest large island of the chain, about 130 miles, and from the nearest point of New Guinea about 150 miles. The main island is oblong in form, and is about 50 miles in extreme length and 16 in extreme breadth. The area of the entire group is about 550 square miles, *i.e.*, about twice the size of the Isle of Man and three times that of Middlesex. The main island is mostly of small elevation, but contains mountains rising to a height of about 1,600 feet, which were visible to the eastward of the anchorage of the "Challenger," in Nares anchorage. The examination of the islands made by the Expedition was confined to the extreme north-western portion of the northern coast of the main island in the neighbourhood of Nares Bay, and to the numerous small outlying islands, which, lying just off the coast, shelter that anchorage.

The land surface in the vicinity of Nares Bay consists of a series of low irregular ridges rising one above another, with wide flat expanses at the heads of the bays on the coast, which are

scarcely or not at all raised above the sea level, and are thus in a swampy condition. The mountains appear from their form to be volcanic, and it is probable that the obsidian used by the natives for their implements comes from them. A trachytic lava was found to compose one of the outlying islands, and a similar rock was observed on the mainland where it begins to rise. A platform of coral sand rock forms the coast line of the main island in many places, and a similar rock is the only component of most of the small outlying islands on which the greater part of the natives dwell. The Admiralty Islands from their position with regard to the equator have an extremely damp climate. They are densely wooded.*

Zoology of the group.—A few remarks on the animals of the islands may not be out of place. Besides the pig and the dog there are of mammalia, two species of fruit bats (*Pteropinæ*), and an opossum (*Cuscus*). A dugong and a dolphin are also killed by the natives.

Of birds the most abundant are the fruit pigeons (*Carpophaga oceanica*), which feed upon the wild coffee and nutmegs, and roost in vast numbers upon one of the small outlying islands. We saw or procured about 28 other species of birds, including an eagle, a lory, a kingfisher, &c., most of which appear nearly allied to or identical with those of the Echiquier Islands.† Small tree swallows (*Collocalia*) fly about amongst the cocoanut trees, and all day flocks of terns and noddies (*Sterna lunata, Anous*), follow in the still waters within the reefs the shoals of skipjacks (*Caranx*) as they pursue the smaller fish. The shores are inhabited by several species of shore birds. Of reptiles there are two species of turtle common here, *chelone midas*, and *imbricata*, the latter the source of the principal article of barter of the natives, tortoise shell. In the swamp pools is a species of crocodile, of which the natives are in great dread. There are also at least one species of land and one of sea snakes (*Hydrophidæ*), and the natives showed themselves acquainted with the danger of handling snakes. A gecko and blue tailed lizard (*Euprepes cyanura*) are also present and abundant.

Literature relating to the Admiralty Islands.—An Account of a Voyage round the World in the years 1766, '67, '68, '69. By Philip Carteret, Esq., Commander of H.M. Sloop "Swallow." Hawkesworth's Voyages. London, 1773. Vol. I.

Labillardiere, Relation du Voyage à la Recherche de "La Perouse." 1791. Paris, an. VIII. T. I, p. 255.

* For an account of the vegetation of the island, see a paper by the author on the subject in Journ. Linn. Soc. Botany. Vol. XV, p. 73.

† An account of the birds of this group is published in Proc. Zool. Soc., 1867, p. 828. Hartlaub. On a Collection of Birds from some less known localities of the Western Pacific.

The above translated by John Stockdale. London, 1800. Vol. I, p. 296.

Voyage de Dentrecasteaux à la Recherche de "La Perouse." Rédigé par M. de Rossel. T. I, p. 131.

Extracts from the above are to be found in general works, such as Waitz' Anthropologie, Meinike' Die Inseln des Stillen Ocean, &c.

History of the Islands.—The Admiralty Islands were discovered by Captain Philip Carteret, of H. M. sloop "Swallow," on September 14, 1767. Captain Carteret lay off small outlying islands to the south of the group. Twelve or fourteen canoes came off, and the natives at once attacked him by throwing their lances into the midst of his crew. He had to fire on them, and although he made efforts to conciliate them these were entirely unsuccessful. From a statement made by Dentrecasteaux it appears that shortly before 1790 the Islands were visited by a frigate commanded by Captain Morelle.

In 1791 the "Recherche" and "Esperance" sailed from France, under the command of Dentrecasteaux, to search for the missing "La Perouse," the "Recherche" having on board of her as one of the naturalists M. Labillardiere.

In the previous year, 1790, the English frigate "Syrius" was wrecked on Norfolk Island, and a Dutch vessel which conveyed her commander, Commodore Hunter, to Batavia, passed by the Admiralty Islands. Whilst she was in sight of the shore, canoes full of natives put off towards the ship, and showed a desire to communicate, and being indistinctly seen in the distance their white shell ornaments seen on their dark skins were taken for white facings on French naval uniforms, and their reddened bark cloths for European fabrics, and Hunter was persuaded that here were relics of the unfortunate "La Perouse."

Dentrecasteaux received information at the Cape of Good Hope by a special despatch vessel sent for the purpose from the Isle of France, of what Commodore Hunter had seen, and he in consequence visited the Admiralty Islands with his two ships, arriving off the Islands in July, 1792. He visited the outlying islands of Jesus Maria and La Vandola lying to the eastward, and then coasted along the northern shore of the main island to the same spot as that visited by the "Challenger." He communicated with the natives by bartering with them from his ships and from boats, but seeing no trace of any European relics amongst them, he concluded that Commodore Hunter had been mistaken in the manner already described, and set sail without effecting a landing. Two separate accounts were published of Dentrecasteaux's cruize, one by himself, edited by Mr. Rossel,

the other by M. Labillardiere. Both contain very interesting information concerning the Admiralty Islanders, the account by Labillardiere being most complete in this respect, and accompanied by large plates of natives and weapons, and a view of Dentrecasteaux Island. These accounts will be referred to in the sequel.

No European appears to have landed in the Admiralty Islands before the visit of the "Challenger" Expedition, which extended from March 3 to 10, 1875.

Anthropology of the islands.—In treating of the characteristics of the Admiralty Islanders, the information will be classified under the series of headings adopted in Waitz's "Anthroplogie."

Domestic animals.—The only domestic animals possessed by the natives of the Admiralty Islands in any abundance are pigs. These are partly kept in enclosures around the houses, partly run half wild over the inhabited islands. The pigs are small, lean, and black coloured, and appear never to develop large tusks. No ornaments of large pigs' tusks were seen in the possession of the natives. If therefore, as I believe, from signs made by the natives, is the case, there are wild pigs on the main island of the group, they must be unlike the Papuan pigs in this respect, and resemble more the New Hebrides breeds. Two dogs were seen on Wild Island. I saw one of these a puppy. It was white, smooth haired, like a fox terrier in appearance, and very like a dog which was in the possession of the natives at Humboldt Bay. No dogs but these two were seen amongst the natives. No rats were seen on any of the islands. No fowls were seen in the possession of the natives, but I obtained a plume of cock's feathers worn as a head-dress from one native. Fowls must therefore exist in the islands somewhere, but are probably scarce, as only this one plume was seen.

Physical characteristics.—The following measurements were taken:—

Measurements in Inches of Natives of the Admiralty Islands, taken by the late R. Von Willemoes Suhm, being of Natives of Wild Island, except 6, 7, 8, 9, taken on board the ship by Von Suhm and H. N. Moseley.

		Height.	Breadth.	Arm, length.	Leg, length.	Foot, length.	Hand, length.	Nose, length.	Forehead, length.	Ear, length.	Breasts, length.		
Women.	1. Old woman, 40 years ca.	60	15	28	..	10	7	..	..	..	7		
	2. Young girl, 15 years ca.	61½	15	25	33	9½	..	1⅞	..	2½			
	3. Older women of mean size	60	12	25	..	9	6⅞	2	3	..	6½		
	4. Old female	63	..	..	..	10	8	..	..	..			
	Mean	61	14	26	33	9½	7½	2	3	2½	6¾		
											Mouth, width.	Penis, length.	Weight in lbs.
Men.	1. Young man	67	16	29	37	9½	7	2	2	2¼	2⅝		
	2. Adult	63	18	28	35	10½	7	2⅜	3	2⅞			
	3. Adult	63	17½	27½	34	9½	..	2	..	2½	3½		
	4. Adult	66	17½	28½	..	..	..	..	..	2⅝			
	5. Oto	67	17½										
	6. Adult	64¾	..	..	..	..	..	..	..	..	..	..	122
	7. Adult	63	..	..	..	9¾							
	8. Adult (photographed).	62½	17¼	27½	33½	10¼	8	1⅞	3	3	3	3	133
	9. Young	66¼	16	27	34	10	7½	2	3⅜	..	..	3½	126
	Mean	64⅞	17⅛	28	34⅓	9⅝	7½	2	3	3	3	3½	127

Further measurements of numbers 8 and 9. 8. Girth of chest with arms held up, 36. 9. Girth of chest, 33. Breadth of foot just behind origin of toes, 4½. Girth at umbilicus, 30. Round buttocks, 34.

Two heights of adult men taken by me, 68 and 60¾.

The measurements of the legs were taken from the great trochanter of the femur to the sole of the foot. Those of the breadth from tip to tip of clavicles. Those of the hand from the inner margin of the palm to the tips of the middle finger. Those of the forehead from the root of the nose to the commencement of the hair. The chest girth measurements were taken with the arms upheld.

Average specimens were selected by von W. Suhm as far as possible. The mean height of the men, as will be seen from the table, is about 5 feet 5 inches. Whilst the tallest man measured was 5 ft. 8 inches, and an unusually short one only a fraction over 5 feet. The mean height of the women is 5 ft. 1 inch.

It is difficult, and possibly of little value, to compare the measurements here obtained with those given in the Anthropological part of the Novara publications, Vol. III, since the methods of measurement differ widely. I have, however, by adding together the lengths there given separately for fingers, hand, forearm and arm, and treating this as the length of the arm obtained, the ratio of the length of the body to the length of the arm in several races, and compared it with the similar ratios in the case of the Admiralty Islanders, using the averages of the measurements where available. The results are shown in the following table:—

	Measurements in millimetres.		
	Height.	Length of Arm.	Ratio of height to length of Arm.
New Zealenders, men	1757	859	2·04
Australian men	1675	819	2·04
Australian women	1596	770	2·07
Tahitian women	1614	772	2·09
German men	1680	789	2·1
German women	1544	713	2·1
Admiralty Island men	1646	711	2·30
Admiralty Island women ..	1549	660	2·30

Whence it appears that the Admiralty Islanders are short armed.

The race is of average height, but the weight is, as usual with savages, below that of Europeans, 126 lbs. (nine stone) as com-

pared with 150 lbs., about the weight of an average Englishman.

The natives contrasted at first glance with the Papuans of Humboldt Bay in being far thinner and lankier. I saw but one native that was at all fleshy, although such were not uncommon at Humboldt Bay.

The usual colour of the natives is a black-brown, often very dark, and darker than that of the Papuans of Humboldt Bay. The young girls and young boys appear much lighter as a rule than the adults. Some one or two of the younger women were of a quite light yellowish-brown, as was also one young man, who came from a distance to the ship to trade. I saw no old women who were light coloured.

The arms and legs of the men are covered with a short sparse curly black hair, which appears as if growing in separate locks,* exactly as in the Humboldt Bay natives. Hair is rarely present in any quantity on the back or chest, but in a few exceptionally hairy examples it was well marked.

The hair of the head, which is worn long only by the younger adult males, formed in them a dense mop, projecting in all directions 6 to 8 inches from the head. It appeared less luxuriant in growth than that of the Papuans of Humboldt Bay.

The hair is crisp, glossy, and extremely elastic, and every hair rolls itself up into a spiral of small diameter.

In general appearance thus it is fine curly, like that of Fijians. On comparing it with a very small sample of hair of the natives of Humboldt Bay taken from several native combs, the Papuan hair proves to be somewhat coarser, but in other respects the two hairs are closely alike, the diameters of the spirals of the curls being the same. Some hair from a native of Api, New Hebrides, is of about the same coarseness as the Admiralty Island hair, but the curls are of much smaller diameter. The hair of the Api Islanders seems to be remarkable for the fineness of its curls. In Tongan hair the curls are of far larger diameter than those of the Papuan or Admiralty Island hair.

The fineness of the curl of the hair in various Polynesian and Papuan races which I have seen, seems to be pretty constant in each race and characteristic. It might be estimated by measuring the diameter of the circles formed by the separate spirally twisted hairs, and taking the average of several measurements. No doubt a certain curve of the hair follicles corre-

* This appearance is probably merely due to the tendency of the hairs evenly distributed at their bases to collect together and combine into curls, and must not be taken to imply necessarily the existence of a condensation or aggregation of hair follicles at certain spots producing hair growing in separate locks, which condition was formerly erroneously supposed to occur on the scalps of Papuans. The body hairs form small curly locks in other races.

sponds with and produces the curl in the hairs, as in the case of the hair follicles of the negro as discovered by Mr. Stewart.* But the amount of curve will be peculiar to each race. The hair of both head and body of the Admiralty Islanders is naturally black, that of the head being of a glossy black.

A very slight trace of whiskers is present in most of the men as a small black streak on the very upper part of the cheek, looking like a continuation of the hair of the crown almost. Regular bushy whiskers were seen only in the case of one man, who had a continuous frill round his face, formed of conjoined whiskers and beard. This man was also remarkable for the greater hairiness of his body, hence I imagine that whiskers and hair generally on the face are exceptional, and not removed by shaving. One or two men had short pointed beards without whiskers.

Eyebrows were generally absent, very probably shaved off (the natives made signs when offered razors, that they used obsidian knives for shaving). I saw eyelashes long and well developed in some youths.

The eyes are not in the least oblique, and open full and widely. The iris is of a dark brown. The forehead is somewhat flattened. There is usually a well marked depression at the origin of the nose, the brow thus overhanging somewhat. The cheek bones are prominent, the face diminishing rapidly beneath them, to terminate in the straight fronted chin. The nose is usually short, with wide alæ and flattened tip. The nostrils are not patent in the adults, or only just to be seen into under the alæ.

In the children the noses are more flattened, and the nostrils somewhat more patent. The septum nasi in all the adults is perforated, and the lower margin of the perforation usually dragged down by the suspension of ornaments, so that in a profile view of the face the large aperture in the septum is looked through by the observer.

Some of the natives, as at Humboldt Bay, have most remarkable long Jewish noses. About 1 in every 15 or 20 has such a nose. I at first imagined that this form of nose was produced to some extent by long action of excessively heavy nose ornaments, but I saw one youth of only 16 or 17 with such a nose very fully developed, and I saw more than one woman with a well marked arched nose with dependent tip, and the women appear to wear no nose ornaments. An incomplete mixture of two races may possible exist here, but unfortunately I did not carefully observe with this view whether the natives with Jewish

* Charles Stewart, M.R.C.S., F.L.S.; note on the scalp of a negro. "Microscopical Journal," 1873, p. 54.

noses showed other points in common in which they differed from the remainder of the population. One of the most marked instances of these peculiar features was that of the head man or chief of Wild Island (Oto).

The lips are of a light brown, very slightly pinkish. They are usually very little prominent, and are not unusually large. The chins are usually straight in front, not rounded, and not prominent, sometimes apparently receding. The jaws are wide. The lower line of the jaws is remarkably straight and horizontal. The lobes of the ears are enlarged and dragged into a long loop by the weight of suspended ornaments. The penis is usually of moderate size. I saw only one man who had a remarkably large one.

Some few of the women were large and stout. One woman that I saw must have been 5 ft. 6 in. in height, but such women were exceptional.

Drawings of the heads of three natives are given, enlarged from photographs in Pl. xxiii, figs. 1, 2, 3.

Variability.—The occurrence of Jewish noses in a certain number of the Admiralty Islanders has already been described. As another instance of variability, I may state that I saw one boy on Wild Island who, though in other respects just like the rest, had his hair quite straight. Light coloured skins were rare, but I saw one man and two women whose skins was of a light yellow colour.

The language of the Admiralty Islanders.—The language of the Admiralty Islanders has been hitherto entirely unknown, and I believe that the short list of about 55 words, besides the numerals, obtained by me, represents all the information at present existing on the subject.

I was continuously engaged in botanical collection during the short stay of the "Challenger" at the islands, and was only able to pick up a few words now and then in the intervals of my other work.

The difficulty of obtaining correct vocabularies from savages, of whose language the investigator is entirely ignorant, is well known, and has been commented on by many writers on anthropology and philology. I was well aware of these difficulties, and I used great caution, and believe that the words which I obtained are mostly correct. The words were all carefully written out before comparison was made between them and vocabularies of other languages, or with one another; and various proofs of their correctness were found when the comparisons were instituted, such as the close similarity of certian words to words in other languages having a similar meaning, and the curious formation of the numerals to be presently described,

all of which were not known or noticed at the time the words were taken down.

I met with the following difficulties with the Admiralty Islanders in obtaining words from them. The natives seemed always ready enough to give the names of particular birds which had been shot, as of two kinds of pigeons and a parrot, or of a cuscus, hermit crab, or any such object which they considered was strange and novel to the inquirer, and one for which he wished to learn a name; but immediately they were asked for the word for the nose, or arm, or any such object common to the inquirer and themselves, they seemed to grow puzzled and suspicious, and to wonder why one could want to know the name of a thing for which one must have a name already. Some men were suspicious from the first, and refused sullenly to give any words at all, and prevented others from giving any. Some would give one or two only, and then refuse further information, whilst I came across two who gave me at least ten words each, quickly one after another, but then, like the rest, failed me. Several of the words I was able to test the correctness of by using them with success to the natives in inquiring, *e.g.*, for human skulls and those of turtle, &c., and offering "one skull one hatchet," sip batu hama sip samil. The words are given in the table, written on the phonetic system, according to the method now generally adopted for expressing Polynesian languages. Some difficulty was found in expressing certain sounds, and especially a sound which seemed to lie between a and o. I wrote down the word for head (batu), whilst my lamented colleague, R. von Willemoes Suhm, wrote it down as botu, and I could not make up my mind as to which way of writing the word was more correct, although I heard it used very frequently.

The following is a list of the words obtained, to which is appended a list of the proper names of a canoe crew which were taken down by Mr. R. Richards, paymaster of the "Challenger," and by him kindly given to me.

Words of the Language of the Admiralty Islands, collected mostly on Dentrecasteaux Island, but partly also on Wild Island.

Numerals.

1 Sip.
2 Huap.
3 Taro.
4 Vavu.
5 Lima.
6 Wono.
7 Hetarop.
8 Anda huap.
9 Anda sip.
10 Sangop. (The hands held with the fingers pointed forwards, and closed side by side, are clapped once when sangop is used.)
11 Sangop sip.
12 Sangop huap.
20 Hungop.
30 Turongop. (So taken down. Tarongop?)

At the use of hungop the hands are clapped twice; at turongop, thrice. Reckoning after 10 is transferred from the fingers to the toes. I saw this done for 11 and 12; probably it is extended to 20.*

Yes	u.
It is or is	ara.
Carpophaga oceanica	ban.
Dove Ptilinopus	u, from the call of the bird.
Parroquet Trichoglossus	sibbi.
Hermit crab, Cœnobita	mwam.
Turtle	bue.
Pig	po.
Cuscus	gohai.
Fish, a caranx, also a selachian	uke, probably a general term = fish.
Applied to the skull of a fish hung up	niharu, probably the name of this fish.
Woman	bibi.
Man	hama, inferred from botu hama.
Boy	naru.
Head	botu, or batu, or between the two.
Hair of head	langam pui?
Ear	darinyà.
Nose	noa.
Eye	manna.
Teeth	luvo.
Tongue	arimè.
Belly	lau.
Arm	bui } limb ?
Leg	bui } limb ?
Penis	piem.
Human skull	batu hama = head of a man.
Pig's skull	batu po.
Turtle's skull	batu bue.
Tortoise shell	bue bu.
Tortoise shell	another term, valus.
To eat	huyan?
Tree	kau.
Cocoanut tree	niu. I think also all palms. It was applied to the Areca palm.
Pandanus	muoi.
Artocarpus sp.	un.
Edible Colocasia	lor. Applied to the plant growing in an enclosure.
" "	mwa. Applied to the roots brought off for sale.
Sago (prepared)	abi.
Plaintain Musa	mborru, pronounced with vibration of the lips. I could not properly catch the sound.

* The idea of counting on the feet as well as the hands still survives in Great Britain. An Irish car-driver in Co. Mayo, last autumn, used the expression to me, "as many times as I could count on my fingers and toes" for a score. The use of the toes in counting is apt to seem extraordinary to civilized Europeans who constantly wear boots and shoes and sit on chairs. The majority of mankind who squat on the floor or ground and have their toes generally exposed, and from their posture near to their hands, naturally pass to the toes in counting after having exhausted the hands.

Betel pepper. Chavica betel.. ..	mbung.	
Sugar cane	bowai.	
Hippopus shell	puke.	
Beads	bujam.	
Fish net	pu.	
Stockade	manu?	
Drum (large wooden)..	dan.	
Armlet of trochus	lan.	
Large earthen pot	oo?	
Native cloth. A narrow strip of bark cloth worn as T bandage.	orlau.	
Hatchet	samil.	
Iron	laban.	Laban is the term given to the peroxide of manganese, which the natives use to blacken their bodies, and has evidently been transferred to iron, because of the metallic lustre and weight of both bodies.
Oxide of manganese		
Canoe	doan.	
Paddle	baban.	
Water	wai.	
Lime used in betel chewing	wav.	
Chief	Oto?	This term was applied to an apparently head man at two separate islands: Dentrecasteaux and Wild Islands.
Land snail	masin.	
Crocodile	saluan.	

About 68 words.

Names of the Men forming the Crew of a Wild Island Canoe, Admiralty Islands.

Taken down by Mr. R. Richards, Paymaster, R.N.

The Chief of Wild Island ..	Oto.
His sons	Susu.
	Shibaya.
	Yare.
	Heve.
	Pomoi.
	Banawayi.
	Babaiu.
	Balusu.
	Babaru.

Remarks on the foregoing Vocabularies.—The system of notation is a decimal one. With regard to the numerals, it will be seen that whilst the earlier numbers up to 5 correspond to some degree with the Malayo-Polynesian forms, and that the word for 5 is the almost ubiquitous lima (hand); the higher numerals are peculiar, and the terms for 8 and 9 are formed by subtraction

from 10, 8 being 10 — 2, and 9, 10 — 1. Anda huap is 8, huap meaning 2; and anda sip is 9, sip meaning 1. Hence anda must mean less or minus.

The plan of making numerals by subtraction is well known as existing amongst several races. Mr. Tyler, in his "Primitive Culture," cites the instances of some North American races, and of the Ainos of Yesso, where the words for 8 and 9 obviously mean 10 — 2, and 10 — 1.*

The following are the Aino numerals, which I have extracted from Langsdorff's travels, those only being given which show the substractive method of formation of the numerals 8 and 9.

Numerals of the Ainu.

Numerals.	Ainu of Kamschatka.	Ainu of the Kurile Islands.	Ainu of Jesso.	Ainu of Gwait of Tschoka.
1	ssinep.	ssyhnāp.	schinep.	schineni schnepf.
2	tuup.	dūph.	toopu.	toni tup.
8	tubis.	dūhpyhs.	tobishchanbe.	tobischanbi. tubischambi.
9	ssinepis.	ssyhnaphys.	schnipischanbe.	schinpischanbi. schnebischambi.
10	uupis.	ūpyhs.	wanak.	wambe. wambi.

Numeral 7 shows no subtractive form.†

I have not been able to refer to Prof. Pott's paper on the art of counting, cited by Mr. Tyler,‡ so that I do not know how wide may be the range of this peculiar expedient in the formation of numerals;§ but it does not exist in any Polynesian language, as far as I have been able to ascertain from examination of numerous vocabularies;‖ and Mr. Tyler gives the Polynesian formulæ for numbers above 5 as 5.1, 5.2, 5.3, 5.4.¶ In the Melanesian languages, to which class the language of the Admi-

* "Primitive Culture." E. B. Tyler, F.R.S. London, J. Murray, Vol. I, p. 269.

† "Voyages and Travels in various parts of the World during the Years 1803, 1804, &c.," by G. H. Von Langsdorff. London, H. Colburn, 1813, p. 361. Specimen of the languages of the Ainu.

‡ "Die Quinäre und vigesimale Zälmethode bei Völkern aller Welttheile." Halle, 1847. Supplemented in Festgabe zur XXV Versammlung Deutscher Philologen, &c., in Halle, 1867.

§ In the dialect used in the central group of the Nicobar Islands, where 1 is hayang and 9 hayang hata, it is probable that the name for 9 is subtractive, but that for 8 is obviously not so formed. "Voyage of the 'Novara.'" Scherzer, English translation. Vol. III, Appendix A.

‖ Unless possibly at Ebon Ralik Islands. See Turner's Tables of Languages in "Nineteen Years in Polynesia." London, 1861.

¶ Tyler, *l.c.*, p. 261.

ralty Islanders might be expected to conform, the higher numerals are formed, as 2nd 1, 2nd 2, 2nd 3, &c. And I can find no trace in any of them, as given in Von der Gablentz' treatise on the Melanesian languages, of any other method of formation.* Neither does this method occur in any of the 33 languages of the Malay Archipelago given by Mr. Wallace, except possibly in the case of the Sula Islands (No. 20 on the list in Wallace, Malay Archipelago). There is lastly no trace of such formation in the Louisiade or Papuan languages, as far as I have had access to vocabularies.† Thus the language of the Admiralty Islanders would stand alone amongst all surrounding races, were it not that in one island, in Micronesia Yap, in the Carolines, an exactly similar formation of numerals occurs, the subtractive formation being in this instance, extended to the numeral 7, as well as 8 and 9.

The following are the numerals of Yap, taken from the latest source of information:—‡

1. Darip.
2. Lakrue.
3. Odelipp.
4. Enninck ningk.
5. Ellall.
6. Ennill.
7. Medelipp.
8. Meruk.
9. Meripp.
10. Erregak.

It will be seen that the numerals are very different from those of the Admiralty Islands, although the method of formation is the same, and I should not lay stress on the resemblance were not there other connections between the languages. It is a remarkable fact that the language of Yap is distinct from that of all other Micronesian languages, except that of the island of Ngoli, colonized from it.§ And apparently it is the only Micro-

* "Die Melanesischen Sprachen." H. C. von der Gablentz. Abhn. der K. Sachsischen, Gessell der Wiss, 1861.

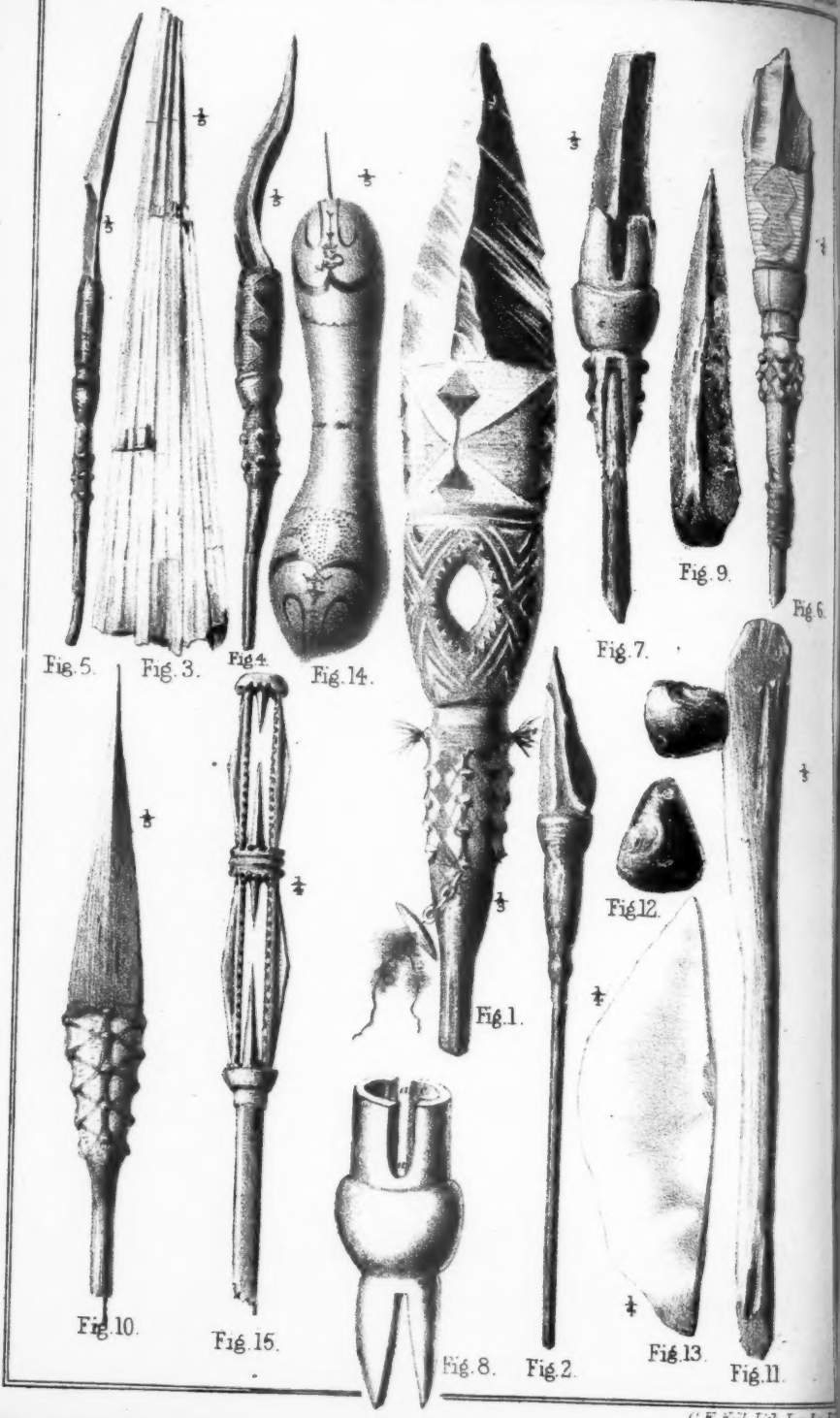
† "Voyage of the 'Rattlesnake.'" McGillivray.

"Voyage of the 'Fly,'" Vol. II, Appendix.—R. G. Latham, on the General Affinities of the Languages of the Oceanic Blacks.

"Ein Beitrag zu der Kenntniss der Sprachen auf Mindonao, &c." Dr. A. B. Meyer, "Tidschr voor Indische Taal Land en Volkenkunde." X Deel, 1873. Batavia, p. 441.

‡ Die Carolinen Insel-Yap oder Guap. Nach den Mittheilungen von Alf Tetens und Johann Kubary. Journal des Museum Godeffroy. Hamburg. Heft II, 1873, p. 12, &c.

§ Chamisso. "Gesammelte Werke," Bd. VI, 1836–9, 103. Cited in "Waits Anthropologie," Bd. III.



C.F. Keil, Lith. London.

nesian language in which the numerals are formed in the manner in question.*

The Yap Islanders are amongst the few Western Micronesians who chew betel, and they are believed to have learnt the habit from the Malays, but it is remarkable that their words for areca nut and the lime used with it differ entirely from the Malay words, and appear closely allied with those in use at the Admiralty Islands.

Lime is in Yap, waej; in Admiralty, wav; in Malay, kapur. Areca nut, Y., mbun; A., chavica, betel leaves, mbung; Malay, areca nut, pinang. The word mbung is applied in the Admiralty Islands to the leaves of the betel pepper, in Yap to the areca nut, but it is possible that at the Admiralty Islands the word includes areca nut as well as the leaves. I cannot find words for these widely spread chewing requisites closely resembling mbun and wav in any other of the Malay or Papuan languages, except perhaps the form of the Malay kapor in Wokan Aru Kawar.† But in the very copious list of native names of plants of the East Indian Archipelago, by G. J. Filet,‡ the Malay word niboeng is given as the name of a species of Areca palm, Areca nibung, whilst djambeh = Areca catechu and pinang areca alba, and A. glandiformis. Possibly the word nibung may be the origin of the Admiralty and Yap mbun, though the Areca nibung has a small fruit not used for chewing as far as I know. The terms for betel and areca nut used at the Louisiade are very different, but the word for lime, hawi,§ possibly is allied to wav. In New Ireland the term for lime is emban; areca nut, boual; betel pepper, poque.‖ At Dorey, New Guinea, areca nut is mereun; betel pepper, naiel; lime, affer. Possibly the Admiralty Island terms mbung and wav come from mereun and affer, and the islanders learnt the habit of chewing from thence. One or two further resemblances

* See Vocabularies in "Hale's Ethnography and Philology of the U.S. Exploring Expedition." Philad., 1846.

Cheyne. "A Description of the Islands of the Western Pacific North and South of the Equator." London, 1852.

Marsden's Miscellaneous Works. London, 1834, p. 796.

Turner. "Tables of Languages in Nineteen Years in Polynesia." London, 1861. I have been unable to refer to v. Kittlitz "Denkwürdigkeiten auf einer Reise nach d. Russ. Am. Mikronesien u. Kamschatka, 1826." Gotha, 1858.

Lesson "Voyage autour du Monde." Paris. Pourrat frères, 1839. T. ii, p. 531 (numerals of Hogolu).

† "Korte Woordenlijst van de Taal der Aroe en Key Eilanden." H. C. Eijbergen. "Tydschr. voor Indische Taal Land en Volkenkunde." Batavia, 1864, p. 557.

‡ "Inlandische Plantennamen Bijeenverzameld en in Alphabetische Orde gerangschikt door, G. J. Filet. Naturkundig Tydschrift voor Nederlandsch Indie." Batavia, Lange and Co., 1859, 4de ser, 5de deel, p. 1.

§ McGillivray, *l.c.*, p. 317.

‖ Lesson, *l.c.*, t. ii, p. 54.

between the Yap language and that of the Admiralty Islanders occur, but most of the words are very different. Woman is in Y., bepinn, in A., bibi; hair, Y., lulegenn and pui, A., langam pui; arm, Y., peei, A., bui. These are resemblances in words which are to a great extent peculiar in the languages. Words like niu, cocoa nut, and hama, pimaon, man, are widely spread sounds for the same meanings.

It is possible that the resemblances between the Admiralty and Yap languages may have no real significance, and would disappear were any but a mere fragment of the Admiralty Island language available for comparison, but it is at all events worth having attention drawn to it. The Admiralty Islands are distant at least 850 miles from Yap, and almost the whole of the Carolines, the Louisiades, New Guinea, and many other islands lie much nearer. The possible drifting of a Yap canoe to the Admiralty Islands might account for the similarity of words such as those for lime and betel in the two islands, but not for the peculiar method of counting, since different words are employed in the two cases.

The Admiralty Island language contains many words of direct Malayo-Polynesian affinity, and it is in these, and not in the other forms, which might be supposed to be of Melanesian affinity that it resembles the language of Fiji and of the N. Hebrides. The following table shows these Malayo-Polynesian words:—

Comparison of Admiralty Island words with those of Fiji, Polynesia, and the N. Hebrides.

	Admiralty Islands.	Fiji.	Polynesia.	N. Hebrides.
Man.. ..	hama.	tamata.	various similar sounds.	
Father ..	..	tama.	tama.	
Breadfruit ..	un.	uto.	ul (Rotumah) ulu Samoa.	ulu.
Water ..	wai.	wai.	wai.	wai (Annatom).
Cocoanut ..	niu.	niu.	niu.	
Ear	darinya.	talinga.	talinga.	talignan (Mallikolo).
Tongue ..	arime.	cama.		
Eye	manna.	mata.	mata.	
Tree.. ..	kau.	kau.	kau.	
Pig	po.	Similar sounds, such as puaka, in both Melanesian and Polynesian languages.		
Fish.. ..	uke.	ika.		

I have not been able to find resemblances between the other

words of the Admiralty Islands and those of Melanesia; indeed they seem remarkably different, and even in the case of the few New Ireland words given by D'Urville*, there seem to be no resemblances, nor do any occur in Rosenberg's† short list of words from Humboldt Bay, New Guinea, with which place Dr. von Willemoes Suhm thought the Admiralty Islanders were acquainted from their understanding the native name of the bay Telok lintju.

The word used by the Admiralty Islanders for iron, laban,‡ is interesting. It is not a modification of any European name, which they possibly might have heard on their first acquaintance with it, but they apply to iron the same word by which they denote the ore of manganese, which they use to blacken their bodies, and which no doubt has been very long in use by them. Hence laban means metal or substance with metallic lustre generally rather than iron.

With regard to the grammar of the language it may be remarked that there seems to be an absence in it of indication of cases in the substantive by means of prefixed particles. Batu hama is a man's head; batu po, a pig's; batu bue, a turtle's; bue bu, turtles' shell. The terms were very frequently used during purchase of these articles, and no connecting particle was heard. In all Melanesian languages such particles exist.§

Expression of the emotions.—A native expressed *astonishment* and *admiration* at the vast size of our ship to me by holding up his hands vertically, with the palms facing forwards, and moving them upwards with a series of jerks as if to express the great height.

Another man put his finger in his mouth in expressing astonishment.

The natives, when talking in an eager excited manner amongst themselves, ran their voices occasionally into a kind of falsetto, producing a sort of affected girlish tone. I noticed the same peculiarity amongst the men of Api, New Hebrides.

Rage.—I had an opportunity of seeing the chief, Oto, in a furious rage. His upper lip was raised so as to show his teeth, which were clenched; his brow was wrinkled, his eyes starting, and his head lowered and jerked towards the object of his wrath as if he meant to attack him with his teeth. He had a most horrible appearance.

* "Voyage de Découverte de L'Astrolabe." D'Urville: Philologie. Paris, 1834, p. 143.

† Rosenberg, "Nat. Tydsch. voor Neder. Indie," xxiv, Decl., Batavia, 1862, p. 333.

‡ Labillardiere gives the word for iron, constantly uttered by the natives, as capelle. He must have mistaken the sound.

§ Von der Gablentz, *l.c.*, p. 256.

Delight.—A man clapped his hands to express his delight at being towed along rapidly in his canoe by the steam pinnace.

Suspicion and *surprise*, as when the natives saw the steam pinnace for the first time, was expressed by knitting the brows.

Laughter is as usual. In the young, in which the nostrils are usually considerably patent, it produces a curious effect. The upper lip is carried far up, and the septum nasi being carried with it, the patent nostrils, so conspicuous before, disappear, and reappear as the grin ceases.

Grief.—A man at Dentrecasteaux Island nearly cried with rage and grief at not getting a hatchet like his neighbours. The muscles of his face, especially those round the eyes, were violently contracted, and twitched convulsively.

Affirmation is expressed by slightly jerking the head up, as at Fiji.

Negation is expressed by a most extraordinary and peculiar method. The nose is struck on its side by the extended forefinger of the right hand, the motion being as if the tip of the nose were to be cut or knocked off. This sign was invariably used to express refusal of proffered barter, or that a native had not got some article asked for. It is capable of various modifications. The quick decided negative is given by a smart quick stroke on the nose. In the doubtful, hesitating negative, the finger dwells on its way, and is rubbed slowly across the nose.

Attention is attracted by a sort of hissing sound, tsit tsit.

Beckoning is performed with the hand held erect with the palm forwards, and moved towards the person beckoned to.

On the first canoes approaching the ship, paddles were held up and waved to express friendship.

Diseases.—The fungoid skin disease (*Pityriasis*) so common at Humboldt Bay, the Aru and Ke Islands, was not at all common amongst the Admiralty Islanders. I saw only four or five cases of it. One man had a large tumour on the side of the face, attached to the ear; another a large tumour in the groin, which Dr. Crosbie, Staff Surgeon H.M.S. "Challenger," thought was a femoral hernia.

Population.—As far as we could conclude from the extent of our observations, the Admiralty Islands are very thinly populated indeed. The main island about Nares' Anchorage is entirely uninhabited, but a small settlement was found on the shore to the east, not far from the mouth of a small river. This settlement was apparently recently established. The natives must certainly at one time have lived or squatted at various spots all over the tops of the hill ridges, for the numerous clumps of cocoa nut trees on these ridges almost certainly mark a spot inhabited at some time or other. At present

the natives seem to confine their dwellings almost entirely to the small outlying islands, no doubt for purposes of protection from one another. Only two of the many small islands about Nares Anchorage, Wild Island and Dentrecasteaux Island, are inhabited. On Dentrecasteaux Island, in the fortified village, there are about 22 houses, and about 30 houses in the island in all. The population is probably about 250 or 300; that of Wild Island is greater, probably between 400 and 500. On one evening 42 adult men left the ship for Wild Island. I did not count more than 100 men and boys in canoes around the ship at any one time. Natives from some distance along the coast visited the ship constantly for barter, &c. On one occasion six canoes with about 65 men in them thus arrived in one lot. The population seems to be distributed here much as occurs generally in Melanesia (Waitz, T. III, p. 559), *i.e.*, the settlements are only on outlying islands, river mouths, and eligible spots on the coast, the inland districts being probably uninhabited. Gerland gives the general population of Melanesia as 142 to the square mile.

Clothing.—The only clothing worn by the males is a piece of bark cloth. This is about five feet long, and about six inches broad, and is in the form of a long tube or sac, open at both ends, being evidently drawn off the cut limb or stem of a tree entire. The cloth is white when fresh, but is often reddened by the natives. It is worn in the usual T-bandage way. The natives, when they have not this cloth on, wear a shell (*Ovulum ovum*), on the penis. The shell (Pl. xxiii, figs. 4, 5) has its inner whorls cut out, but not so as to widen the mouth very much, if at all, and a very sharp edge is left at the cut surface, and it is extraordinary that it can be worn without inconvenience.* The shell is usually worn so that its narrow mouth flattens and nips the penis, just behind the glans, but it is not always in such a position. I saw one man alongside the ship who had the shell on in such a way that the prepuce was nipped over the middle of the glans, and the glans flattened out to an astonishing degree. Another with a penis of unusual size, had the shell embracing the end of the prepuce only, which was drawn tight forwards over the glans. The shell was very seldom worn underneath the cloth. When the cloth was put on, the shell was carried in a small bag hung round the neck. The shell was sometimes plain, often tastefully engraved with the usual zig-

* Several authors, imperfectly following Labillardiere, have described the shell as having a hole bored in it (see Meinike, "Die Inseln des Stillen Oceans." Leipzig, P. F. Rohberg, 1875, 1er th. s. 145), and regarded it as a mere covering. Labillardiere describes appearances of ulceration of the penis as occurring in some instances from irritation caused by the shell. I observed no such condition.

zag patterns. Only adults wore the shell. Boys wear the cloth before they assume the shell. The men always cover themselves hastily on removing the shell for barter, and evidently consider that they are exposing themselves either indecently or irreligiously, if they show the penis bare. A boy whom I came upon suddenly, with his cloth undone, replaced the covering in a great hurry. Similar observations were made by former visitors to the islands, but some men who had no cloths with them, remained exposed after Labillardiere had purchased their shells.

Various surmises have been made with regard to the meaning of this strange decoration of the penis. A somewhat similar custom is common to a large number of Melanesians and Papuans. The New Caledonians, *e.g.*, decorate the penis, binding it up in an extraordinary manner. The Humboldt Bay people wear gourds in the place of shells, but are not in the least ashamed of being uncovered. In Waitz (Vol. iii), the conclusion is come to that the glans penis is sacred to the god, and therefore not to be exposed to the view of man. Whatever the origin of the custom may have been, it seems very probable that the idea of circumcision may have arisen from it. It would seem possible that unintentional circumcision may have come about by swelling of the penis when confined in the narrow sharp-sided slit of the shell. Or that, the prepuce having become swollen, and being tightly nipped by the shell, the shell may have had to be cut off by division of the prepuce, and beneficial effects having followed, circumcision may have been generally adopted. Circumcision is practised in many parts of Melanesia, as at Kunai, New Hebrides, and at Fiji. At the Nitendi Archipelago, the upper part of the prepuce is cut off. In the modern Jewish rite, the prepuce is held and drawn forward in a narrow slit in a silver guard.

It is just possible that the gourd or shell may have been adopted to check a display in public of sudden sexual impulses amongst a people otherwise unclothed. Erection of the penis must be an impossibility, or cause severe pain, when either gourd or shell are worn. A display of every impulse in a community where women were not absolutely common property, would lead to unlimited fighting, and hence some means for restraining the outward show of these impulses would be adopted. This may have been the cause of origin of the sense of shame at being uncovered. The other articles worn by the male natives are to be regarded more in the category of ornaments than clothing, though it is impossible to draw the line between the two, and all clothing appears to have arisen from modifications of ornament, no motives of decency having operated

in its primitive development. The Humboldt Bay native, with ornaments of all kinds of elaborate make on his body, legs, and arms, leaves his organs of generation very commonly entirely uncovered. The far lower Australian of Cape York has absolutely nothing, neither clothes nor ornaments, except permanent cicatrices on his body, and occasional paint. Even in civilised countries dress seems still to be regarded in the light of ornament and display rather than covering for warmth or decency's sake. Thus, in the Philippines, amongst the Tagals and Bisayans, it is the commonest sight to see in the streets small children of both sexes with gaudy shirts on, which reach no lower than the navel, and nothing else. And in Japan, scruples about the covering of the genitals seem scarcely to have arisen, since formerly men and women regularly bathed together in public baths.

Women's Dress.—The women wear two bunches of a grass, or perhaps prepared from pandanus leaves, which are fastened by a belt round the waist, and hang one in front, the other behind, the hinder being the longest, and thus recalling, to some extent, the dress of some New Hebrides women. The bunches are of a natural dirty-brown, not coloured or ornamented in any way. This is the only dress of the women.

Amongst the lower races of savages, decoration follows the law which is almost universal amongst other animals. It is the male which is profusely ornamented, whilst the female is deprived of decoration. This condition is almost entirely reversed by civilisation, and the grade of advancement of a race may, to some extent, be measured by the amount of expense which the men are willing to incur in decorating their wives. The males in highly-civilised communities revert to the savage condition of profuse decoration only as warriors or officials and on state occasions.

Amongst the Admiralty Islanders, the decoration is almost entirely confined to the men, and these seem averse to part with any of their finery to the women.

Ornaments.—It must be remembered that Pacific Island native ornaments are all made to show on a dark skin. White shell or tusk ornaments look exceedingly well against the dark skins of natives, although when removed and handled by whites, they show to little advantage. The young girls amongst the Admiralty Islanders sometimes have a necklace or two on, but they never are decorated to the extent to which the men are. The old women have no ornaments. I saw one girl only with a necklace of the beads procured from the ship. Another girl had one of small unshaped lumps of wood, worn apparently rather as a charm than an ornament.

The men wear armlets of Trochus niloticus shell, like those of Fiji, the Carolines, &c. They wear often seven or eight on each arm. The rings are neatly engraved with lines forming lozenge-shaped patterns, and form very effective ornaments indeed.

Circular plates, ground out of Tridacna gigas, are also worn either as breast-plates or on the front of the head. The discs are faced with plates of thin tortoise-shell, perforated with very elaborated patterns. Pl. xxxi, figs. 1, 2, 3.

Long style-like ornaments of Tridacna-shell are worn dependent from the nose. They are closely like those which, in the Solomon Islands, are worn stuck transversely through the septum nasi, but are here always worn dependent by a loop of twine. Ear and nose ornaments are also made of the teeth of the Cuscus of the islands, and crocodiles' teeth. The ears and nose septa are always perforated. Pieces of rolled-up leaf are worn sometimes in the ear (perhaps those of chavica betel).

Necklaces of native beads of shell or cocoanut wood are also worn. Rings of tortoise-shell are commonly worn in the ears, as at Humboldt Bay. Both waist-belts and armlets of fine plaited work, with patterns in yellow and black, are common. These resemble those of the Aru Islands and Humboldt Bay.

Charms composed of human bones (Pl. xxi, fig. 7), usually the humerus, bound up with eagles' feathers, are worn suspended round the neck, and hanging down the back between the shoulders.

The body is seldom decorated with green leaves, as at Humboldt Bay. But leaves are occasionally worn, both hanging down the shoulders and on the arms. I saw them once so worn. Flowers, also, are seldom worn, but a single Hibiscus rosa sinensis flower is occasionally worn in the hair.

Hair-dressing.—The hair in the women, young and old, is cut short all over the head, and worn thus simply, without decoration of any kind. In the boys, the hair is short, I believe cut short, as in the women. Only the young men of apparently from 18 to 30, or so, wear the hair long and combed out into a mop or bush. In the older men the hair is always short. There are probably religious ceremonies connected with the cutting of the hair, for the very large quantities of bunches of fresh-looking hair suspended in the temples are probably not all, at least if any, taken from the dead.

The mop of hair in the young men, possibly the warriors (though numbers of adults still in full vigour had their hair short), is carefully combed out, often reddened, and greased. A triangular comb is worn in it, also plumes of cocks' feathers, fastened to hair-pins or plumes of the Nicobar pigeon, or the night heron. The mop of hair is sometimes constructed by

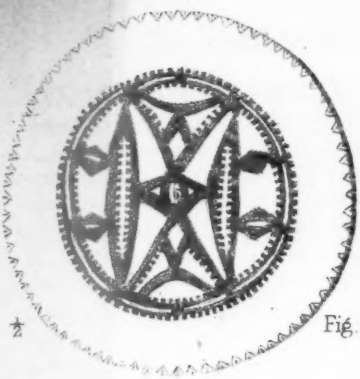


Fig. 1.

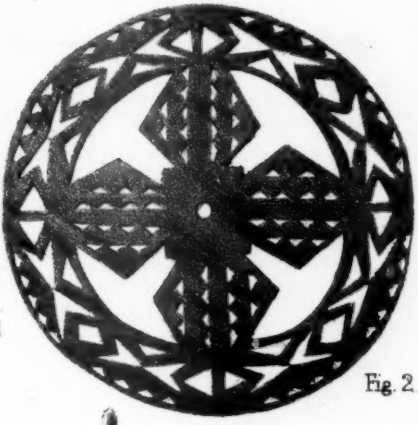


Fig. 2.

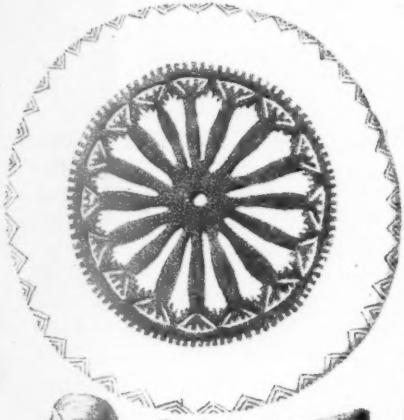


Fig. 3.

Fig. 4.

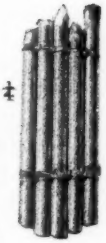


Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 12.

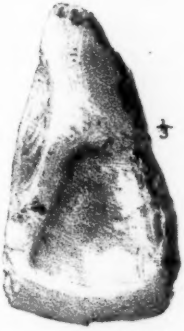


Fig. 9.

Fig. 10.

C.P. Kell. lith. London E.C.

means of an encircling band behind the head into a cylinder projecting backwards and upwards, and on this cylinder a sort of bonnet of a leaf of a dracœna, or some other plant, folded over it, is often worn. The hair is not so decorated or cared for as at Humboldt Bay. Nor, *à fortiori*, does it approach in elaboration the head-dressing of Fiji, but one native, who was especially hairy on the face and body, had his hair very carefully cut and plaited behind into four tails, ornamented with knots somewhat in Fijian style. I saw no instance of the powdering of the hair with white, as described by Carteret, nor of the hair of the body being plucked out. I believe that the eyebrows are shaved.

Tattooing.—The males are mostly marked with cicatrizations on the chest and shoulders. These cicatrizations are in the form of circular spots, about the size of half-a-crown. They are sparsely disposed over the upper part of the chest and shoulders in front, and sometimes are continued down the back in two lines leading obliquely downwards from the shoulders to meet one another about the middle of the back. I saw no other form of cicatrization than this of circular spots. The marking appears to be assumed only at adult age. No boys had cicatrizations. One full-grown young man of 20 years or so had the spots fresh and raw, apparently raised by burning.

Tattooing is almost entirely confined to the women, with whom it is universal. Two males, however, were tattooed. One, a small boy, had a simple ring-mark round one eye. The other, an adult, had rings round both eyes. These were, however, exceptional cases. The tattooing is not made up of fine dots or pricks, but of a series of short lines or cuts.* The colour is an indigo-blue. The women are tattooed with rings round the eyes and all over the face, and in diagonal lines over the upper part of the front of the body, the lines crossing one another so as to form a series of lozenge-shaped spaces. The tattooing is sparse and scarcely visible at a short distance, and nowhere are the marks placed so close to one another as to form coloured patches on the body, as in Fijian women or Samoan men.

Painting.—The male natives occasionally had their chests and faces reddened with a burnt red clay. Sometimes one lateral half of the face is reddened, the other being left uncoloured. When vermilion was given to the natives they put it on cleverly and symmetrically in curved lines, leading from the nose under each eye, showing that they understood how to use it with effect. No doubt they paint themselves elaborately on festive occasions, in war, &c. They were fond of being painted, and

* Probably made with obsidian flakes. I am informed that the Solomon islanders are tattooed with short cuts thus made.

two natives who were painted on board all over with engine-room oil-paint, yellow and green, in stripes and various facetious designs, were delighted.

The natives were also often coloured black, the colouring matter used being an ore of manganese which gives their bodies a metallic lustre, like that given by plumbago. The blacking was extended over the faces and chests. The old women were often blackened, and a group engaged in singing an incantation were all blackened. A man, who was possibly a priest, was always most carefully blackened over the face, arms, and chest, and possibly the blackening has a religious signification.

Betel-chewing.—The natives nearly universally chew betel, using the pepper-leaf areca-nut and lime together as usual. Some one or two men were observed who did not chew at all, and had no lime-gourds. The lime is carried in gourds of a different form from those used at Humboldt Bay, but perforated in the same manner at one end with a small hole through which the long spoon-stick is inserted. (Pl. xx, fig. 14). The lime is conveyed to the mouth with the stick. At Humboldt Bay ornamental patterns are burnt on the gourds, which are worn on the penis, but the lime-gourds are not decorated. Here all the lime-gourds are decorated, but all with nearly the same pattern.

The use of kaava and of tobacco is entirely unknown to the natives.

The principal vegetable food of the islanders is cocoanuts and sago. The sago is prepared into a farine, and preserved in hard cylindrical blocks about a foot in height, and six or eight inches in diameter. Specimens of the preparation have been placed in the Kew Museum.

A Taro-caladium esculentum is also eaten. It is cultivated in small enclosures adjoining the houses, but to a very small extent, and there are no large clearings or cultivation of any kind which leaves its mark on the general features of the vegetation of the islands as at Humboldt Bay or Api, New Hebrides, Fiji, &c. Plantains are grown sparingly round the houses. A bread fruit tree also grows about the villages. Several wild fruits, a hog plum, Spondias, a small fig, and the fertile fronds of a fern are eaten by the natives, and they have a sugar-cane of better quality than that used at Humboldt Bay. Young cocoanut trees are planted about the houses, and protected from injury carefully by means of neatly-woven cylindrical fences.

Young cocoanut trees are also planted with care on the uninhabited islands. (On these subjects, see my "Notes on the Plants of the Admiralty Islands.")

The natives have no yams (Dioscorea), nor sweet potatoes.

As animal food they have abundance of fish, their pigs, and the cuscus, which lives in all the islands. They also catch or kill pigeons, and the night heron (Nycticorax), and probably other birds occasionally, for eating, and they gather shell-fish, &c., on the reefs and in the mangrove swamps at low tide.

Cooking.—The flesh of pigs is roasted by the natives, and served for eating placed on a quantity of the prepared sago in large wooden bowls, which are often elaborately carved. The cuscus is also roasted, and is carried about cold, roasted whole with head, tail, and legs intact, ready for eating by tearing it with the teeth at any moment. I saw no boiling being done, but the earthenware pots made by the natives were evidently used for that purpose.

There are wells on the inhabited islands; they are at some little distance from the houses. They are shallow holes dug in the coral ground. They are kept covered in with sheets of bark, &c., and at each cocoanut-shell cups are hung up for drinking.

Houses.—The houses of the natives are built on the ground, and always close to the shore. They are all of an elongate beehive shape, occupying an oval area of ground. On Wild Island they are built of a continuous wall and thatch of grass and cocoanut-leaves or similar material. They thus look like long haycocks somewhat.

In Dentrecasteaux Island many of the houses have their walls built up neatly of wood cut into billets and piled as firewood is in Europe. The roofs are similar to those in Wild Island. They are supported on two stout posts rising from the foci of the oval floor in each house, and by a regular framework of rafters, &c. Shorter posts, placed along the walls at intervals, support the roofs at their periphery and the walls. Very often the ground is excavated to a depth of a foot or so beneath the house, so that the wall is partly of earth, and one has to step down to get into the house.

The dwelling-houses are mostly about 20 to 25 feet long, 10 to 15 feet in height, and about 10 feet in breadth. They have a low opening at one or both ends. To the main supporting posts of the roof are secured a series of wide horizontal shelves placed one above another, and on these shelves food, implements, &c., are kept. I saw these shelves in the women's houses. In some of the houses are also bed places, consisting of rough boards fastened against the side posts of the walls on one side, and supported by short special posts on the other. Arms, implements, &c., are suspended from the posts and rafters. The dwelling-houses have no further furniture. The posts are sometimes curved and painted, and occasionally a human skull is

fastened to a post, or placed under the thatch. Everything about the houses is rough, and there is no neatness as in Fijian buildings. About the houses in the villages bright-red draceænas are commonly planted as ornaments. representing the flower garden in its most primitive stage. The temples are houses exactly like the dwelling-houses, but larger—about 20 feet long, 15 broad, and 20 in height. Some have carved door-posts of wood, the respective carvings representing a male and female figure. The doors are closed by a kind of hurdle.

Canoes.—The canoes are more of the Polynesian than the Papuan form, *i.e.*, they have their bows and sterns low, and simply pointed, and not turned up and built so as to form figure-heads, as at New Guinea and the Aru Islands. The canoes' hulls are formed each of a hollowed trunk of a tree, with a single plank built on above it, and a gunwale-piece as a finish. The hollowed-out portion has slightly and equally rounded sides, and is not flat on one side and rounded on the other, as in the Carolines. The mast is stepped in the bottom of the canoe just in front of the horizontal outrigger platform. A pole of about similar length, with a natural fork at the top, is stepped against the foremost end of the cross-bar of the horizontal outrigger, and it and the mast being inclined towards one another, the mast is fitted into the fork at the top of the pole, and roused down with a rope-stay so as to remain firm in that position. The bow and stern are formed of small elongated blocks of wood built on to the ends of the canoe, and level above with the horizontal gunwale-piece. They are ornamented with a simple carved ridge or two, and with ovulum ovum shells, a single row of a dozen or so being fastened on either side. A horizontal outrigger extends from the middle of the canoe on one side, and is connected with a long canoe-shaped float, and opposite to it is an inclined shelf or deck supported on two or three stout projecting beams. A platform is formed with planks on the horizontal outrigger, and on the outer part of this a large store of spears and the mast, sail, &c., is kept. On the inner part the natives sit when not paddling, and stow on it some of their gear, food, articles for barter, &c.; but most of these are kept on the inclined platform, where also some of the crew often sit. The inclined platform not touching the water, and opposite to the outrigger, seems to be something peculiar to the Admiralty Islands. For figures of a canoe see Pl. xxii.

A canoe which I measured was 39 feet in length, 1 foot 6 inches in breadth, and 1 foot 4 inches in depth in the centre. In girth in the centre from gunwale to gunwale round the bottom, 3 feet 7 inches.

Another canoe measured in length 33 feet. Length of the

solid built on stern and prow, 2 feet. Breadth of the same at the tip, 3 inches. The sloping outrigger or platform was inclined to the water at an angle of about 30°.

It was 6 feet in length, 4 feet in breadth, *i.e.*, in line of junction with the canoe.

The main horizontal outrigger had a length of 10 feet, the stout cross-bar connecting its component pieces being at half its length or 5 feet from the canoe. Its breadth was 4 feet 3 inches. The length of the outrigger float 16 feet. Breadth in centre 5 inches. Depth, 10 inches. Thickness, 4 inches.

Depth of the canoe in centre 1 foot 9 inches. Breadth, 1 foot 1 inch. Two kinds of paddles are used, steering paddles and paddling ones.

The masts are about half the length of the canoe, and are stepped just in front of the outrigger platform. The yards are of about three-fourths of the length of the mast. The mast sail is nearly square in form. It is hoisted to the top of the mast, and set so that one corner is uppermost. The opposite corner does not nearly reach down to the canoe, hence the square sail being high above the water has a very peculiar look when seen over the sea at a distance. As at all Pacific islands, apparently the outrigger platform is the place of honour, and the seat of the head man or chief. Oto, the chief of Wild Island, never occupied any other position, and never touched a paddle.

Small canoes with simple outrigger, holding one or two persons, are used for paddling about the reefs round the islands. The large canoes are manned by from 10 to 15 men.

Swimming.—The natives swim hand over hand. They never take a header in diving, but jump in after anything upright, sinking feet first with the body inclined forwards.

Fishing.—Long sein-like nets are used for fishing. These nets are probably the property of a community, for they are kept hung up in the temples. I saw one about a fathom in depth and of very considerable length. Hand nets fixed on elbow-shaped frames of wood are also used. Stake nets are used, and lines of stakes are conspicuous objects just off the shore near the villages. I did not see whether the long nets were used attached to the stakes. A set of stakes was seen in the shallow bay near Wyville Point on the main island. Above the stakes on the top of a hill ridge is a clump of cocoanut trees. There is no village now at this spot; but it was probably once the site of one.

Fish-hooks are used made of Trochus shell (Pl. xxi, fig. 12), all in one piece. They are of a simple hooked form without barb. The natives did not seem to care for steel fish-hooks, and apparently did not, at first at least, understand their use.

It is possible that they have never found out the plan of using bait on a hook. All Polynesian and Melanesian fish hooks which I have seen are of the nature, of artificial baits of bright nacre, &c., imitating small fry in the water. If the natives did not understand the use of baits, it is no wonder that they despised European fish-hooks.

Technical handiness.—Pottery.—Large cooking pots of thin earthenware are made by the natives. The large pots are mostly nearly spherical in form, with a narrow neck. Some pots with widely open mouths are also made. Some of them have a pair of simple ring handles neatly turned over on either side. The pottery is not glazed, and is, as far as I saw, almost devoid of ornamentation.

As household implements the natives have likewise large wooden bowls in which they serve up their cooked sago. The men carry gourds full of chunam, with a small hole only at one end, fitted with a carved stick or spoon, for betel chewing. The cloth worn as a T-bandage by the men is made of the inner fibre of the bark of some tree (possibly Thespesia populnea), which is removed entire from the cut limb as a sac open at both ends, and 6 feet long. The natives have no regular tappa, *i.e.*, cloth in which numerous strips of bark fibre are welded together side by side. The cloth is sometimes coloured red, but never ornamented with patterns. Good cordage of bark fibre is plentiful, also string, and netted or plaited bags, like those of the Humboldt Bay men.

Waist-belts and armlets (Pl. xxi, fig. 6) are worn made of very finely plaited shreds of Pandanus leaf, or some such substance, of bright yellow and black, in patterns resembling those of the New Guinea and Aru Island natives, and those of the Carolines, although of course far inferior in workmanship to these latter. Rhizomorpha, though it is abundant in the woods on the main island, is not used for the manufacture of ornaments or dress, though it is in Fiji and Humboldt Bay.

The natives possessed considerable numbers of well made and carefully finished models of their canoes of various sizes. It is difficult to see what inducement savages can have to make such models. Sometimes, but rarely, chunam boxes are used which are made of a bamboo joint with a lateral branch retained inside, and made into a loop so that the box hangs as an armlet.

The knives are usually carried in the hair, but I saw one man with a knife in a band on his left arm, as cassowary bone daggers are carried at Humboldt Bay.

Metals.—The natives have no metals of their own, excepting the ore of manganese, with which they blacken their bodies. This ore they call "laban," and they have adopted the same term for iron.

They appear unable to work iron at all, since they refused any pieces not of a form immediately applicable to use. They preferred a small piece of hoop iron to a conical mass of iron weighing several pounds.

Implements.—The tool in most constant use by the natives is a small adze (Pl. xxi, fig. 8), consisting of a natural crook of wood with a Terebra maculata shell bound on to it, the shell being ground down until only one lateral half of it remains. Such small shell adzes were abundant enough still, but in most cases the shell had been replaced on the handle by a piece of hoop iron. Every man almost carried one of these small adzes hung on his left shoulder. From the houses large adze blades made of Tridacan and Hippopus shell were obtained. (Pl. xxi, fig. 9). They resemble somewhat those of the Carolines, but are very roughly made indeed, only the actual edge being ground. None were seen mounted, and they appeared to have gone out of use. Axes made of hard volcanic rock were also obtained from the houses. They have ground surfaces and are triangular in form, and resemble the stone adzes of the Solomons, but are mounted in an entirely different and very primitive way, as axes, being merely jammed in a slot cut in a club-like billet of hard wood near its end. (Pl. xx, figs. 11, 12). Only one specimen was obtained mounted. These stone implements did not seem plentiful, and the natives valued them highly and required a high price for them; and when I at first showed them a Humboldt Bay stone axe, to try and explain that I wished to buy such from them, they were immediately anxious to purchase it themselves. The chief had a very fine large one, with which he would not part.

The heads of the obsidian-headed spears serve as knives, being cut off just below the ornamented mounting which acts as a handle.* Long flakes of obsidian are however also mounted specially as knives in short handles. (Pl. xxi, fig. 10.) They are excessively sharp, and used to shave with even, but are of course very brittle. Pieces of pearl oyster shell, usually semi-circular in shape, ground down thin to an edge on the rounded border are used constantly as knives to cut cordage, &c. Knives made of the spine of a sting ray (Trygon) are also used. Large ground pearl oyster shells are used to dig with.

Weapons.—The Admiralty Islanders have no bows, slings, or throwing sticks, ulas (Fiji), nor clubs. Their only weapons are lances of several kinds, which are thrown with the unaided

* This is an interesting instance of the same instrument serving different purposes in a rude condition of the arts, other cases of which have been dwelt on by Colonel Lane Fox, F.R.S. Lecture "On Primitive Warfare," "Journal of the Royal United Service Institution," 1867–9.

hand, not even with a cord as in New Caledonia. They have no spears like the Humboldt Bay men, Fijians, &c., to be used at close quarters, and no shields.

The principal weapon is a lance formed of a small, suallyu flexible shaft of tough wood, a natural stem often, with the bark trimmed off, to the thicker end of which is attached a heavy head of obsidian, which, in size, appears out of proportion with the light shaft. The obsidian lance-head is usually of this conical form, but some have a knife-edge in front, and some are irregular. (Pl. xx, figs. 1, 4, 5, 6.) They are shaped by bold wide flaking. The points and edges are often slightly re-chipped in order to sharpen them, but the original faces and angles are never worked up for the sake of symmetry or balance, but remain rough. Many lances have their edges and points sharp and perfect, though formed entirely by the original flaking. The hinder borders of the lance-heads are simply rounded. They are secured in a socket of wood attached to the end of the shaft by means of a cement, and by being bound round with fine twine. The socket is hollowed out in a separate piece of wood, and in order to facilitate the scooping-out process two slots are usually cut in the faces of the socket. (Pl. xx, figs. 7, 8.) The shaft of the lance is spliced into a V-shaped slot in the lower part of the socket piece. A rounded strengthening piece is retained in the socket piece, between the actual socket and the narrowed part of it, in which the slot for the shaft is cut. A very hard and solid gum is used to bed the lance-head in its socket, and the shaft in its slot, and to mass together the turns of fine twine which secure the whole. In some lances the entire socket piece and the turns of binding twine are concealed by an even thick layer of the gum (Pl. xx, fig. 2), whilst in others the gum is used more sparingly, and the turns of twine and wood of the socket piece are exposed to view. In the former class of lances ornamentation is effected by patterns being incised in the layer of gum, and these have no coix lachryma seeds attached to them. In the latter class the upper turns of twine are arranged in diagonals, &c., separating the ornamental colours, and the actual wood of the socket pieces is carved and coloured. This gum employed is probably the same as is used for caulking the canoe seams, which is obtained from a brown ovoid fruit about the size of a goose's egg. The efficiency of the fixation of the stone head of the lance evidently depends mainly on this gum. The wood of which the socket-pieces are made is hard when dry and old, but probably much softer when cut in the fresh condition.

Many of the lance-heads are of most irregular forms, remaining just as they happened to flake out in manufacture. Some

have
used

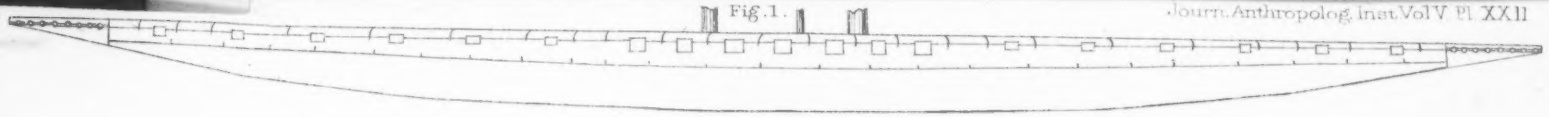
allyu
bark
heavy
with
this
e are
bold
y re-
and
y or
and
ginal
mply
ed to
ound
arate
ocess
gs. 7,
n the
piece
l the
A
n its
urns
the
aled
hers
and
rmer
cised
eeds
wine
ours,
ured.
king
fruit
n of
this
hard
the

ain-
ome

Fig. 1.

Journ. Anthropolog. Inst. Vol V Pl. XXII

Fig. 1.



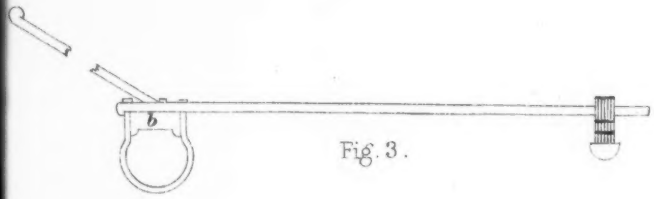


Fig. 3.

Scale of Feet.

1 2 3 4 5 6 Feet

For figures 1 2 3. 6 7.

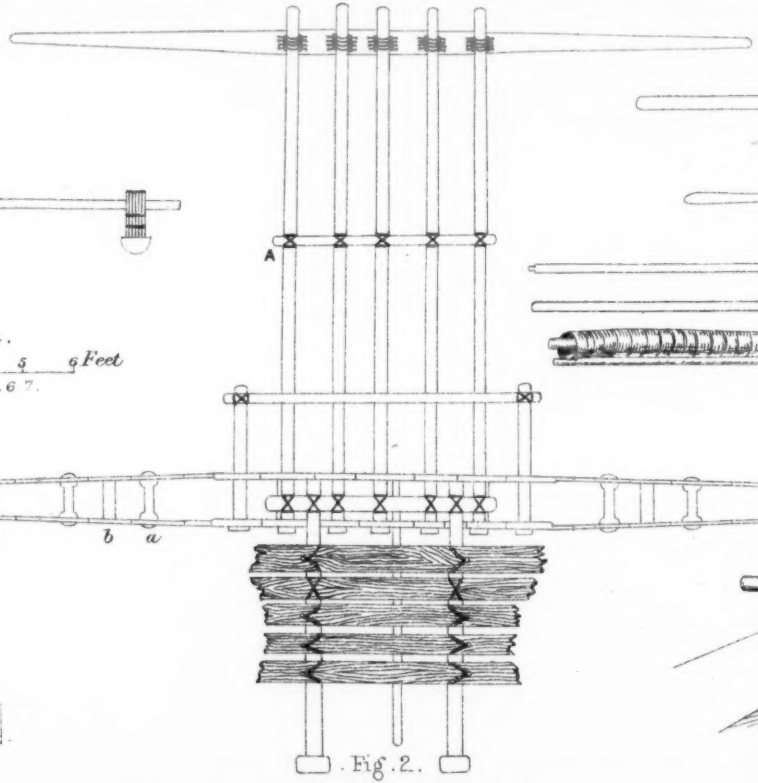
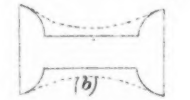


Fig. 2.



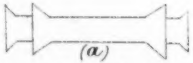


Fig. 4.

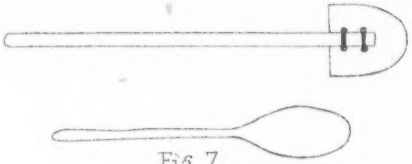


Fig. 7.

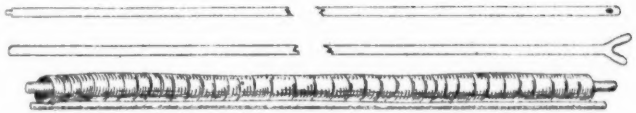


Fig. 6.

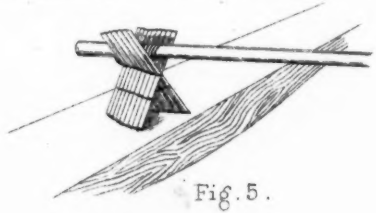


Fig. 5.

are thus extraordinarily long, some curved, &c., &c. They are most formidable weapons, especially to a naked skin. The shaft is an instrument merely for throwing point first a very heavy, excessively sharp pointed, stone, which must cut its way through everything. The socket pieces of the lance-heads are elaborately decorated. Some lances have a lozenge-shaped perforation in the socket piece beneath the head. Some have small tufts of cuscus hair fastened on to them just beneath the head. Two such which I obtained had these tufts wet with some oily substance, but apparently not poison. The heads of the javelins are kept covered with a conical sheath of dried plantain leaf made to fit. (Pl. xx, fig. 3.) The natives possess an enormous store of these weapons. They have piles of them lying on the outriggers of the canoes. On shore the men commonly carried two or three in their hands. In a dispute alongside the ship one of the lances was instantly snatched up and made ready. They are used for hunting wild pigs as well as for fighting. The natives pointed to the mountains of the main island as the source of the obsidian. They parted with the lances readily, and the material must be abundant. The lances are thrown in the usual manner, grasped by the naked hand, being first made to quiver by a shaking motion of the hand for some seconds.

Some of the lances have shafts of a light but rigid reed. Some have large carefully cut sharp-pointed heads of hard wood. The wood is painted of the same colour as the obsidian, and at a short distance looks exactly like it. Some of the wooden heads are longer and larger than any of the stone ones. I several times bought such, thinking I had before me excessively fine obsidian weapons. (Pl. xx, fig. 10.)

Besides the larger lances, small darts are used, having pliant, very light stems about a yard long, and heads of small sharp chips of obsidian, often of very irregular form, apparently the refuse chips from the larger weapons. These darts are carried about done up in bundles of a dozen or so. A guide whom I took on Wild Island carried such a bundle on his shoulder all the way.

Another kind of dart has the stem of reed and a head of hard wood of a somewhat conical form, with a knob at the base of the cone. The darts are of the same length as the others, and are likewise carried in bundles. They are, I believe, thrown overhand, being held by the hinder extremity, and swung round vertically.

I saw no other weapons. There are no defensive weapons, shields, &c. Though there is an enormous abundance of wild pigeons at the island the natives have invented no means of shooting them. They can only climb the trees and catch them at roost, or knock them off the nest.

Art Carving, &c.—The natives are extremely expert in wood carving, and show most remarkable taste in their designs. The lance-heads are often carved. (Pl. xx, fig. 1.) The carving taking the form mostly of incised patterns, the effect being heightened and beautified by the use of black, white, and red pigments.

The white coral lime, the red burnt clay, the black, possibly charcoal of some kind. The guardian deities carved on the door-posts of the temples and posts of the houses are ornamented also in the same style. Similar patterns are graved on the ovulum shells and armlets. (Pl. xxiii, figs. 4, 5.) These patterns are all modifications of the lozenge or diamond, and without curves; but besides this, various patterns are burnt in upon the surfaces of the chunam gourds, and in these the lozenge is combined with various curves. (Pl. xx, fig. 14.)

An entirely different class of carving is that of the large wooden bowls which are used for eating out of. These resemble somewhat those of the Solomon Islanders, being, like them, blackened, but in the present case they are most remarkable for their graceful forms and delicately carved handles. The bowls are worked with wonderful precision, considering the tools available, to the circular form, appearing as true as if turned. They are widely open, and are provided with a pair of curved handles, which rise above the level of the tops of the bowls, and are sometimes ring-like, sometimes cut in a delicate spiral. They are always ornamented with perforated carving, and often bear a pair of crocodiles, or roughly executed human figures on their outer margins. The bowls stand always on four short legs, like the Fijian kaava bowls. They never have a circular bottom, no doubt because there are no level surfaces for them to rest upon, and because the idea is derived from a four-legged stool.

A still more remarkable appreciation of symmetry and fertility in design is shown in the patterns which are cut upon the circular plates worn sometimes on the forehead, oftener on the breast. These consist of circular white plates ground down out of Tridacna shell, with a hole in the centre for suspension. On the front of this white ground is fastened a thin plate of tortoise-shell, which is ornamented with fretwork, so that the white ground shows through the apertures. The patterns are of endless variety, *no two being alike*, and show all kinds of combinations of circles, triangles, toothing, radiate patterns, &c. The shell background is often graved also at its margin. Symmetry is evidently striven after, but with the appliances available the execution falls short here and there of the design. Nevertheless these ornaments are very beautiful. (Pl. xxi, figs. 1, 2, 3.)

A regular style of ornamentation is preserved for each class of ornaments, weapons, &c. Thus I saw no ovulum shells with

curved patterns like those on the gourds. Both these and the bracelets bore simple patterns of diagonal lines graved and blacked. The spears, also, never bore curves.

The canoes are ornamented with red and white colouring, the ends of the cross pieces, &c., being picked out with paint, but they have no carved prows as have those of Humboldt Bay and Dorey. The sticks or spoons with which the chunam is carried from the gourds to the mouth are often richly carved in the handle. The skulls of turtles suspended in the temples are ornamented with patterns painted in the three usual colours. The human skulls are likewise decorated, and some have eyes of pearl shell inserted into the orbits on a background of black clay.

Music.—The musical instruments used are the conch shell, perforated on the side as usual, a very simple Jews'-harp, made of bamboo, of the usual Melanesian pattern, pan pipes, of three to five pipes of different lengths (the New Hebrides natives have pan pipes with three pipes), (Pl. xxi, fig. 5,) and, lastly, drums. These latter are hollowed out cylinders of wood with a narrow longitudinal slit only opening to the exterior. Some of them are small, 1½ foot or so in length, and are carried sometimes in the canoes. The larger drums I saw only in the temples. They are cylinders, 4 feet in height and 1½ foot in diameter, and are fixed upright at the entrances of the temples. There were four such at the four corners of one temple. The slit in these is not more than 4 or 5 inches broad, and I do not understand how the cylinders are hollowed out by the natives. Very similar drums exist at the New Hebrides, at Efate, *e.g.*, where they are stuck upright in the ground in circles.* They seem to be an improvement on the Fijian death drums, which are simple widely open troughs, and a step towards the very narrow mouthed wooden drums or bells of the Japanese. The natives seemed to have no idea of tune, they blew the notes on the pan pipe haphazard. The chief of Wild Island blew a child's tin trumpet with evident satisfaction. He appropriated it from one of his subjects, to whom I had given it, and came off to the ship standing on his canoe platform and blowing it with all his might. The drums were constantly sounded on Wild Island often in the afternoon.

Dancing and singing.—The women, both old and young, dance, moving round in a ring with a quick step. The men signified that they danced too, but were not seen to do so. I did not see dancing myself.

I saw some old women performing a kind of incantation.

* "A Year in the New Hebrides," by F. A. Campbell. Melbourne, George Robertson, 1873, p. 111, figure Fili Id Efate.

They sat on the ground in the yard of one of the houses, four of them sitting facing one another in a circle, whilst two sat outside the circle. They had their faces and bodies blackened. They uttered at regular intervals a chant, ai aiai aiai aiai aiai umm. The commencement was shrill, in a high key, and the terminal umm was sounded low, with the peculiar humming lingering sound, just as in Fijian chants.

Trade.—The Admiralty Islanders had possibly traded with Europeans before our visit within tolerably recent time.* They came off at once to the ship in the utmost hurry, in a strong breeze, thinking probably that she was not coming into harbour, and they held up all sorts of articles of barter. They brought off their tortoiseshell ready done up in bundles, and they knew the relative value of various qualities. The chief had a large European axe, which I believe was not procured from the ship, and many natives had hoop iron adzes. Nevertheless they must have had very little experience indeed, otherwise they would not have taken old German newspapers freely as trade as they did at the first, thinking them to be fine cloth, until rain had fallen. They soon took to making trade goods, shell hatchets, and models of canoes, *e.g.*, which were as badly made as our own trade gear. They understand the rules of barter well, and, as in Labillardiere's time, seem anxious to pay their debts. They pretended, with many expressive grimaces, to be unable to bend pieces of tortoiseshell which they offered for sale, and of the thickness (*i.e.*, fine quality) of which they wish to impress the purchaser. They often thus pretended to try ineffectually to bend very thin pieces indeed, and fully entered into the joke when we did the same with thin bits of hoop iron. They always required to see the hoop iron tested by bending before accepting it. They must trade with one another regularly. They made signs that the ore of manganese which they use came in canoes from a distance eastwards. The native canoes are so seaworthy, and the natives so enterprising and fearless in going to sea, that possibly articles may pass by barter from island to island here over wide distances, even to New Hanover, New Britain, &c.

The natives took all the hoop iron from us which they could get, evidently receiving more than they could use, no doubt intending it for future barter. My colleague, the late R. von W. Suhm, believed that the natives on Wild Island recognized the native name of Humboldt Bay (Telok Lintju), and pointed in

* There are specimens of Admiralty Island lances and gourds in Col. Lane Fox's collection and in the Christy and British Museum Collections. These have been obtained from Cape York, and no doubt were taken there by tortoiseshell and pearl shell traders who had visited the Admiralty Group.

the direction of New Guinea, having knowledge of the place. Hence he thought that they visited the place to trade. I think, however, that he must have been mistaken. The Admiralty Islanders could never make a stand against a race armed with bows; they would be cut off at once; and had they once seen bows and arrows they would surely have adopted them. (The Australians have not done so at Cape York, though the Murray Islanders come to trade there and bring bows and arrows with them, but then they are far lower in intellect, and have the throwing stick.) Many other circumstances concur against the above hypothesis.

The Admiralty Islanders were anxious to trade with us to the very last, and followed the ship as she left the anchorage, with that intent.

Position of the women.—The women are in a state of subjection, as at Fiji. Their favours were offered us by the men, namely, by the Chief, Oto, who pressed the matter, and by others. This is unusual amongst Melanesians, and rather Polynesian. The women have houses to themselves, *i.e.*, there are special women's houses. Whether these are only for unmarried women or not I do not know; I think not. I saw an old woman and a young mother with a new born child in one, which I think was a regular woman's house. The unmarried men have special houses. Polygamy is practised. Oto, the Chief, told R. von W. Suhm that he had five wives. I do not imagine that the aged are killed. I saw several aged miserably lean hags, one especially emaciated and disgusting to look upon, and also old men. On one occasion amongst a party of 42 natives in nine canoes there were two old men, one with grey hair, the other somewhat infirm. Children are carried by the women generally on the back, but sometimes on the hip astride.

The Chief, Oto, pointed out one youth as his son, and took away presents which were given to him.

War.—The village at Dentrecasteaux Island is fortified. A palissade about ten feet high stretches right across the corner of the island, where the village lies shutting this off from the landing place. The path to the village led through a gate-like opening in the palissade, which seemed in not very good repair. The palissade was without ditch or embankment. The village itself was surrounded by a second wall, low, and crossed by styles. At Wild Island there was no fortification. The natives inhabit the small outlying islands, probably for protection from attack. Very few natives were seen living on the main land, and these few at one spot only. Former places of dwelling on the main land appear to have been abandoned. We saw no actual fighting, but in a quarrel about some barter alongside the ship, Oto

the Chief, attempted to strike a native in another canoe from a distant small island. He was prevented by his own men, who held him back. The opposite party at once got their spears ready, and threatened him with them.

I saw no traces of cannibalism, although an anonymous correspondent of the *Times* newspaper, writing from the ship, appears to have thought that he saw evidence of it. The inhabitants of each small island appeared to be under a separate Chief, and quite independent of each other. The Chief's power seemed to depend on his fighting qualities. The Chief of Wild Island had considerable power. He ordered all the canoes away from the ship on the first evening of our arrival, on our anchoring. He took articles away from men to whom they were given, and made arrangements for each man of a party getting a hatchet, &c. He never paddled himself, and he pushed canoes out of the way when approaching the ship. He, however, clamoured with the rest for presents and trade. He had no ceremonious respect paid to him at all.

Religion.—There are several temples in Wild Island. They have already been partially described. One such had as door posts a male and female figure roughly carved in wood, but elaborately ornamented with incised patterns and colour. Between the legs of the female figure was represented a fish. There are in the same figure black patches with white spots, which appear to mark out the breasts. The hair in both figures is represented as cut short, and thus the mop of hair of the warrior is not represented in the male figure. No clothes, *i.e.*, T-bandage of bark cloth, bulla shell, nor ornaments, such as earrings, nose ornaments, breast plates, &c., are indicated on the figures, and the male figure has no weapons. The ears of both figures are, however, slit for earrings, and it is possible that a zone of diagonal ornament passing round the body of the male figure represents the plaited waistbelt commonly worn. On the upper part of the chest of the male figure are a series of circular white ring marks on a black ground, which evidently denote the circular cicatrizations present in all the male natives. In the female figure the tattooing is possibly intended by a wide patch of diagonal ornamentation upon the abdomen, as also by lines drawn round the eyes, and not present in the male figure. In the male figure one lateral half of the face is painted white and the other red. The arrangement of paint in this way is in vogue amongst the natives here as at Fiji. I saw one Admiralty man with one side only of his face reddened, and in Fiji at dances it is common to see natives with one lateral half of the face blue and the other red or black. The penis of the male figure is represented as erect. All the ornamentation on the

figures is of the common zigzag pattern, and formed of a series of lozenge and triangular shaped spaces. The patterns are incised, and coloured of three colours, black, red, and white. The parts coloured white and red are cut in, whilst the patches of original surface left in relief are blackened. Guardian deities such as these are common in Melanesia and Papua, as is also their combination with representations of fish. Careful coloured drawings of the figures were made by Mr. J. J. Wild, artist of the Expedition, and my description of the figures is derived from these drawings.

Another temple had no figures but the four large drums already mentioned. To the rafters and supports of the roofs of these temples inside are fixed up quantities of skulls of pigs and turtles, all arranged regularly, with the snouts downward. The skulls were decorated with colours. With them were suspended large quantities of balls of human hair, some evidently old, others of recent date. These balls or masses of hair were suspended sometimes in networks of string, sometimes in small receptacles of a very open basket-work. Both the bunches of hair and the skulls appeared often to have regular owners, though dedicated in the temple. The natives parted with both freely for barter.

The hair is probably cut off as a religious ceremony. Some men had the hair recently cut off. (See on hair dressing *supra*.) A dugong's and a porpoise's skull were produced for barter. The natives evidently treasure skulls of all sorts. Human skulls are likewise kept stuck up in the thatch of the houses. At Dentrecasteaux Island, one having an ornament in the nose was suspended to the front of a house over the doorway by means of a stick thrust through holes in the two squamous parts of the temporal bone. This skull the owner could not be induced to part with, but usually they were sold pretty freely, and they were in considerable abundance about the houses, but often much shattered. A dozen only were purchased. The natives are very superstitious. When a group was being photographed, the old women put up two long poles transversely between themselves and it in order to protect themselves from its evil influence. The chief and others were abjectly frightened at a squeaking doll, and signed for it to be taken out of their sight, and expressed a similar fear of goats which we offered them, saying the women would be afraid of them. When I began sounding the big drums in the temple, my guides hastily drew me out of the place in terror, and made signs that the people from the chief's group of houses would come and cut my throat.

A mystery was always made about the principal temple containing the images. Sometimes it was freely open, at others closed, and I was warned back by the chief on two occasions

when I attempted to enter. The temple with the drums was used for the suspension of the large fish nets, no doubt common property.

The charm, made of a human humerus wrapped round with feathers (Pl. xxi, fig. 7), and worn hung round the neck, was taken in the hand and flourished about, dashed against the ground, and used apparently to swear by during a violent harangue of one of the chief men of Dentrecasteaux Island, who wanted possibly to incite the natives to attack our boat, or to try and capture a much coveted bag of trade gear in it. These feather and bone charms are sometimes made of four human ulnar and radial bones, sometimes of hand bones, and one contained the bones of a large bird, probably the eagle (*Pandion haliætus var leucocephalus*). It is a curious fact that one such charm which was purchased contained an imitation head of a human humerus, cut in wood. Possibly the owner intended to deceive his enemies by this artifice. Some of the officers told me that they made the natives readily understand when they wanted to visit the temple by pointing upwards. It would appear thus that the gods or religious influence is supposed to reside above, an idea still surviving amongst Europeans. The only appearance which I saw of a religious ceremony was the chant of the old women. One man who came off to the ship often, invariably with his body blackened all over with peroxide of manganese, was thought to be a sort of priest. He wore a narrow fillet round his head, with an ovulum ovum shell suspended from it on one side.

Burial.—The dead are buried in the ground. Two different natives, one on Dentrecasteaux Island, and the other on Wild Island, explained to me by signs in an unmistakeable way, that the skulls put up about the houses were obtained by burying bodies in the earth, and afterwards digging them up again. The value set upon the skulls and bones as ornaments, and probably also superstitious motives, are no doubt the reason why no marks of burial were seen. No mark is made probably, for fear of the bones being stolen. Two at least of the skulls procured were those of females.

Character.—The fact that some of the men restrain themselves and abstain from the use of betel, seems to be a proof of considerable strength of character. I gave a hatchet to a guide at Dentrecasteaux Island as pay, according to promise. He seemed grateful, and presented me with his own shell adze in return, unasked, and he made signs that the others had got enough, and that we were not to give more away; that we were being swindled. The natives seem extremely passionate. Oto was quite furious with rage when he attempted to strike the other

Fig. 1.

Fig. 2.

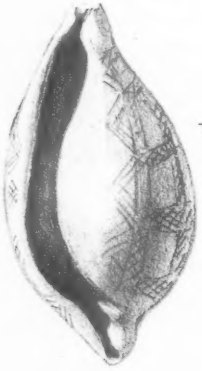


Fig. 5.

Fig. 3.

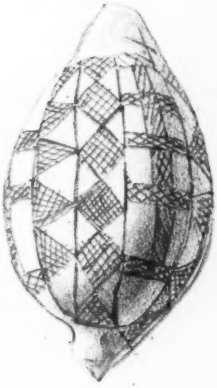


Fig. 4.

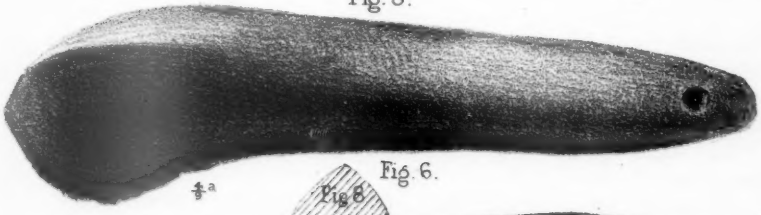


Fig. 6.

Fig. 8.

Fig. 7.

C.F.Kell lith. London E.C.

man. The natives when we saw them in the canoes alongside the ship, as described, were of course, in a highly excited state, the value to them of the iron procurable from us being hardly to be overrated.

The natives are quieter than the Humboldt Bay men. There was comparatively little noise when their canoes were alongside. There was no combined shouting. The natives are rapacious and greedy, and very jealous of one another. The chief showed all these traits in the highest degree. They were ready enough to thieve, but not so constantly on the look out for plunder as the Humboldt Bay Papuans.

General.—The natives showed no great astonishment at matches or a burning glass, apparently understanding the latter, and motioning that the operator should wait until the sun came from behind a cloud. Looking-glasses were not at all understood. They were tried in all positions, as ornaments on the head and breast, for example. The natives seemed to see no advantage in seeing their faces in them. In Labillardiere's time they broke them to look for the picture, or man inside. Tobacco and pipes were not understood. Biscuit was eagerly taken and eaten. Great wonder was expressed at the whiteness of our legs and chests by the natives, and the women at Dentrecasteaux Island crowded with great curiosity and astonishment to look at a white arm or chest. The natives no doubt thought our hands and faces only painted white, and took our negro on board for a man who had not got the paint on.*

I am convinced that both the Humboldt Bay and Admiralty Island natives believed that we bought their weapons in order to use them as such. They frequently, when offering spears, &c., showed by signs how well they would kill. They are fond of ornament, though they have not devised anything like the amount of decorations which are worn by the Humboldt Bay men. The chief, Oto, went about with three bright-coloured cricket belts round his middle, but he provokingly wore a sun helmet, given to him by the captain, in order that he might readily distinguish him amongst the crowd, by proxy.

The natives of course did not understand our steam pinnace, nor apparently see in the fire the cause of motion. They came up to the cutter when sailing to get a tow for their canoes, expecting to see her go ahead, head to wind, in the same style.

The natives were much frightened at first at the sound of a gun, and astonished. A guide who went with me when I was shooting birds, stopped his ears at first, and bent down trembling every time that I fired. The natives were, however, not much

* Dark natives, I believe, often take white men for a race of Albinos, which occur not uncommonly amongst Melanesians at least.

scared by our firing our ship's guns and rockets at night, and came off to the ship next day to trade.

Canoes full of men leave the small inhabited islands every day, and go fishing, or visit the main island in search of fruits, shell fish, &c., whilst the women seem to confine themselves to their small native islets.

Changes in the habits of the natives in 100 *years.*—109 years have elapsed since Carteret discovered the Admiralty Islands, and 84 years since the visit of Dentrecasteaux, yet the natives seemed to have changed very little indeed in their habits.

It is remarkable that Labillardiere states that the natives observed by him chewed no areca nut, and that none had their teeth discoloured by it. Lime and betel pepper leaves were used for chewing, but only the chiefs possessed these articles of luxury. Nevertheless Carteret specially mentions betel nut as chewed by the natives whom he encountered. The use of the nut has possibly been introduced into the northern part of the main island, since Labillardiere's time, but is ancient in the southern islands.*

Carteret does not mention the use of the ovulum shell, but mentions the obsidian-headed lances, earthen pots, &c. The natives of New Ireland preferred iron already in Carteret's time to any other article of trade, but he does not mention whether the Admiralty Islanders were acquainted with iron.

Labillardiere found the Admiralty natives clamorous for iron, and Dentrecasteaux thought it probable that they had learnt to know its use from Capt. Morelle's frigate, which preceded him shortly in his voyage.

The natives appear, as was to be expected, less suspicious of strangers than formerly. Their weapons, &c., are just the same as they were 100 years ago, and even the curved ornamental pattern burnt upon the chiman gourds is identical with that in vogue at Labillardiere's visit. When Dentrecasteaux approached the islands the canoes came off just as to the "Challenger," and stood off the ships some distance, whilst the chiefs hailed with words. Communication was opened with Dentrecasteaux's boats by a slave being driven by repeated blows of a stick, administered by the chief, to swim to the boats with cocoa-nuts, as an *experimentum in corpore vili.* In one respect only besides that of the areca chewing the natives seemed to have altered, and that is that they do not now enlarge the openings in their ears to the enormous extent to which they did in the days of Labillardiere, as shown in his plates, where the loops hang down on the shoulders. Labillardiere says that the natives use their

* The natives of the Louisiade use areca nut and chunam, only without betel pepper. Macgillivray's "Voyage of the 'Rattlesnake,'" Vol. I, p. 222.

paddles as oars, not as paddles. This, as far as I saw, is not the case.

Affinities of the Admiralty Islanders.—The close resemblances of the Admiralty Islanders in one or two matters to the Papuans of Humboldt Bay, and their wide difference in most others, are striking.

The islanders resemble these Papuans in wearing a curious covering on the tip of the penis, and differ apparently in this matter from all other known races, though many Melanesians and Papuans decorate the penis in other remarkable ways; and in using gourds with spoon sticks for chunam. In their stone implements they differ widely from, and are far inferior to, the Papuans. Their houses, weapons, canoes, and modes of expression, differ also entirely from those of the Papuans. In wearing nose ornaments and slitting the septum nasi for them, they resemble Melanesians generally, Solomon Islanders as well as Papuans. The Solomon Islanders and Papuans wear their ornaments stuck through the nose transversely. The Admiralty Islanders use an ornament very similar to that of the Solomon Islanders, but wear it as a pendant. The Papuans were not ashamed of exposing their persons, and taking off their gourds, whereas the islanders were.

The most remarkable fact about the Admiralty Islanders is that of their having no bows and arrows, slings, throwing sticks, or throwing cords for their spears, no ulas, clubs, spears for hand to hand fighting, and no shields. Many other Melanesians have no bows and arrows, as the New Caledonian Loyalty Islanders, and apparently the New Britain and New Ireland races, and the same is the case with the natives of the south-east of New Guinea;* bows and arrows seeming to commence on the coast only at Humboldt Bay, but all seem to have slings or other additional means of defence. The New Britain people have flint (obsidian) headed "arrows without bows" (lances), and wooden axes.† The examination of the twelve skulls of the Admiralty Islanders obtained may possibly throw some light on their race affinities. Von Willemoes Suhm, who collected them, made some measurements of them, and I believe concluded that they were of Fijian affinity, but I am uncertain.

The natives are, I think, certainly of Melanesian rather than Papuan affinity, and probably will prove nearly allied to the New Hanover natives; but their nearest neighbours are at present very little known. The anthropological results of the

* "Australia Directory," Vol. II, Notice No. 19. London, 1875, p. 39. Note by Lieut. J. S. Dawson on the Natives.

† "Voyage of 'La Perouse.'" L. A. Millet Mureau. Trans. London, Lackington and Co., 1807, p. 265.

voyage of the German ship of war, "Gazelle," will, when published, no doubt throw light on the matter.

Dentrecasteaux's ships visited the Hermit Islands (Los Erimitanos), and though the canoes of the natives were different, Labillardiere saw one native wearing an ovulum shell.*

Lieutenant F. W. Saunders, R.N., who visited the Hermit Islands, in H.M.S. "Alacrity," in 1874, says that there are two villages on them; but does not give further information.

Note.—A considerable portion of the above paper, though in manuscript at the time, was not read at the meeting.

Discussion.

Miss Buckland wished to know whether the Admiralty Islands were included in that which is called the Louisiade Archipelago, as the Bath Museum possessed beads and shell breastplates and ear ornaments from the latter, very similar to those exhibited from the Admiralty Islands? She also wished to know whether the women were the cultivators of the *taro* which Mr. Moseley spoke of as grown in the islands?

Professor Rolleston, after expressing his gratitude to the author for the great amount of facts, and especially for the exhaustive enumeration of the various points bearing on the affinities of the Admiralty Islanders, with which they had been favoured by him, compared the paper to the paper on the Aymaras, published some years ago by Professor David Forbes, and said that he hoped that it would be similarly published *in extenso* in the Society's Journal.

In reply to Miss Buckland's inquiry, the author of the paper said, that in geographical position, the Admiralty Islands are far distant from the Louisiade Archipelago, that is to say about 700 miles in a direct line. The whole of New Britain and New Ireland and nearly all Papua lie nearer to the Admiralty Islands than the Louisiade Archipelago, whilst the Solomon Islands lie at about the same distance as the Archipelago.

Nevertheless, there are many resemblances between the Louisiade natives and those of the Admiralty Islands. The best account of the Louisiade Islanders is to be found in Macgillivray's "Voyage of the 'Rattlesnake,'" London, Boone, 1852, Vol. I, p. 190, &c. Besides the resemblances in the shell, breastplates, ear ornaments, &c., mentioned by Miss Buckland, it may be mentioned that the Louisiade natives, like the Admiralty Islanders, carry their lime for betel chewing in "calabashes" (gourds), with carved sticks to spoon it out with. The Louisiade canoes seem to differ in form from those of the Admiralty Islands, and I could find no resemblances between the two languages. The native women were more or less scared during the visit of the "Challenger" to the Admiralty Islands, and hence it was not observed whether they cultivate

* Labillardiere, *l. c.* p. 272.

the taro or not; but there can be little doubt that such is the case, as at Fiji and throughout Melanesia.

The PRESIDENT.—I have to say simply, that I am delighted to hear this paper read, on account of the attention that is paid in it to minutiæ and the evident accuracy of the observations which the author has made upon these, I may say, almost newly discovered tribes, because I believe that no European has before landed on the Island. When travellers indulge in generalities, as is commonly the case in their description of savage races, they speak of things which all people in the same stage of culture share more or less in common, and which are, therefore, of little use to the anthropologists, but when, as in this case, detailed descriptions are given, we are able to trace connections, and here we can perceive, off hand, some resemblances between the arts of the Admiralty Islanders and other races without giving to the paper that more careful attention and study which anthropologists will devote to it in times to come. In the first place as regards stature; we see in the averages given, viz., 5 ft. 5 in. for the men, and 5 ft. 1 in. for the women, that there is not that great difference between the males and the females which Professor Rolleston and others have noticed as characteristic of the Andamans, for example, and some other savage tribes, the difference is no greater than would be found amongst ourselves. Then the observation that the children are fairer than the adults is an important one, because I think naturalists will be generally inclined to regard the children as the more probable representatives of the ancestors of the people in regard to colour; at any rate it will be a point for further consideration. I should like to know whether Mr. Moseley observed any difference between the coast tribes and those of the interior. [The Author replied that his observations were confined to the coast tribes only.] The diameter of the spirals of the curls of hair appears to me to be a new and interesting observation, because the spiral in all probability depends on the section of the hair; the more oval or tape-like the section, the closer probably the curl; therefore in the absence of any means of examining the former microscopically, the latter may be taken as typical of the class. The uniform growth of the hair over the scalp and not in patches, tallies with the most recent observations upon Papuan heads. [The author here remarked that although the hair grew uniformly over the scalp, it appeared to grow in patches upon some parts of the body.]

The mode of drawing attention by hissing strikes one as being very universal, and seems to have been adopted independently by many people, no doubt as being the best means of drawing attention without making use of any articulate sound expressing any definite meaning, much in the same way that we whistle to call a cab, or hiss in many parts of the continent of Europe for the same purpose. The continuous loop coil ornament designed upon one of the gourds exhibited is a class of ornament which is common in Assam, and all that part of the continent of Asia, and which I believe to be the pattern from which all those broken coil ornaments which are so

markedly characteristic of New Guinea and New Zealand ornamentation have been derived, and the observation that in the Admiralty Isles different patterns are employed for different classes of objects appears to me important, as tending to show that the patterns have migrated with the objects upon which they are drawn, and the well known conservatism of savages has no doubt been a means of keeping up their association with those objects only. The shapes of the obsidian spear-heads formed, as the author says, just as they happened to flake off, are interesting as showing the natural origin of such forms, and the remark that the spear-heads are used as knives reminds us of like customs in Africa, where the Kaffirs, the Watusi described by Grant, the Fans of the Gaboon, and others, use their iron spear-heads in a similar manner, and which accounts for the form of knife and spear-head amongst savages being so commonly the same. One form of obsidian spear-head I notice amongst the objects exhibited, which consists of a sharp flaked edge on one side, and a chipped edge on the other. Such forms are common amongst the prehistoric flint implements found in Europe, and are usually called knives, because they somewhat resemble one of our ordinary penknives, having a thick back and a sharp edge, but we here see it used as a spear-head, and we observe that the chipping is simply intended to produce symmetry.

Amongst survivals it is most interesting to observe the wooden spear-heads painted black, in imitation of the obsidian blades, and the charm consisting of a human humerus, preserved and bound round as a trophy of the slain, has been imitated in wood by some one who could not obtain a genuine bone, reminding us how, after the Crimean war, gold bullet pendants to bracelets, introduced originally to contain a bullet extracted from the wound of some friend or relative, came into fashion, and were worn for some time by people who had no associations of the kind, like causes producing like results all the world over, amongst people in the same condition of culture. Many of the objects exhibited and the account given of the arts of the Admiralty Islanders generally connect them with those of New Guinea, as described by Dr. Comrie. Amongst these descriptions may be noticed the skulls fastened to the posts of the houses, the betel spoons, the Jews' harp, pan-pipes, and the circular shell ornaments, having curved tortoiseshell patterns attached, all of which occur in New Guinea. The practice of shaking the lance before throwing it has been described in Australia and other places, where darts are used. The particular class of outrigger canoe described by the author as existing in these islands, consisting of an outrigger on one side, with a counterbalancing platform on the other side, not touching the water, is used also in other places. In Samoa we find the first idea of this *weather platform* described by Wilkes. It consists, there, of a simple boom, rigged out on the side opposite to the outrigger, on which the men run out when the outrigger is pressed into the water by the wind, and counterbalance the boat by their weight. It is described also in some of those from the Solomon Isles and parts of New Guinea, and its

distribution led me in a paper which I wrote upon the subject in the 4th volume of this Journal (p. 430), to conjecture that it would be found in some of the islands to the north, which now turns out to be the case.

The absence of the bow in the Admiralty Isles accords with the view I take of the distribution of this weapon, believing it to have spread over a continuous area in the Pacific, and to have missed certain islands. To the best of my belief, though it is dangerous to go upon negative evidence in such matters, it is not used in New Britain or New Ireland, but it is used in Malayta, to the south of the Solomon group; also in Santa Cruz,* and in all the islands of the New Hebrides and Loyalty group, which is its most southern limit. From thence it is found eastward in most of the islands of the Pacific. Westward we have it throughout New Guinea, and at Cape York, where it is derived from New Guinea. [Mr. Moseley observed that he had been at Cape York, and it was certainly not in general use by the natives there.] Col. Fox continued: I am glad to be informed by the author upon this point; it is certainly known there, as we have it from many authorities, and I have both bows and arrows in my collection which have been obtained from Cape York. They resemble those of New Guinea, both in the shape of the bow and arrows, and the strings of rattan, and the fact of their being but little used, shows only that it is not indigenous, but has been introduced, which I believe to have been the case in many of the Polynesian Islands, a fact which is confirmed also by the name for it, *panna* or *fanna*, being common to many of the islands. It is very important to trace the distribution of this and similar arts. If, as has been suggested by some, the bow was originally universal in the Pacific, and has been discontinued in some of the islands, owing to the absence of large animals and the disuse of hunting, then there would be no reason why the distribution of the bow at the present time should be continuous. I have endeavoured to trace the distribution of the use of the notch for the string at the base of the arrow; unfortunately travellers can seldom be induced to make the detailed observation necessary. The present paper is, however, a great exception to this general defect, and the Institute is much indebted to Mr. Moseley for it. The mention of the fortifications in the Admiralty Isles is of interest. I should be glad to know if Mr. Moseley noticed the use of flanking defence in any of these works; probably from the absence of missile weapons it would not be used. [Mr. Moseley said he had not noticed flanking defence in any of them, but his attention had not been especially drawn to the point.]

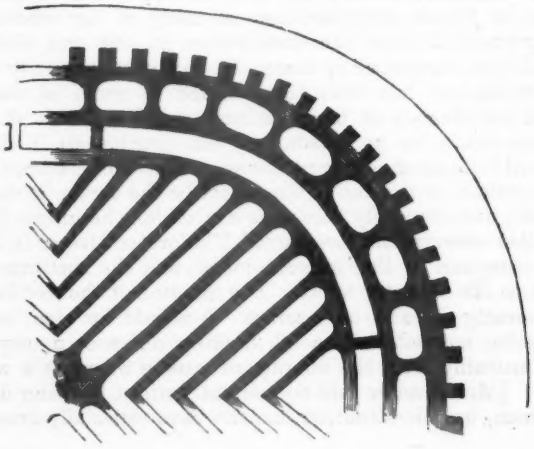
In reply to the remarks of the President, the author tendered his thanks to the President and Society, for the kind manner in which his paper had been received. With regard to the question of coast and inland tribes, the author stated that his observations had been

* From Commodore Goodenough I received arrows obtained by him from Mallicollo, Erromango, Santa Cruz, and Malayta.—A. L. F.

entirely devoted to the coast natives, and that he considered it very possible that no regular inland tribes existed.

The continuous loop coil ornament referred to by the President occurred upon a chunam gourd from Humboldt Bay, and was not observed at the Admiralty Islands. The charm in which a human humerus is replaced by a carved piece of wood made to resemble it, was regarded by the author of the paper as possibly rather an instance of a deliberate attempt on the part of a native to impose upon his fellows, and make them believe that he had secured the real trophy, than as an instance of survival. With regard to Cape York it might be well to remark that savage weapons from all parts of Melanesia and Polynesia, and from Papua, were constantly being brought thither by pearl shelling vessels and small traders, and that they were bought up by such whites as the police in the barracks established at the port, and by them re-sold, mingled together, to visitors.

P.S.—Since the reading of the paper, the attention of the author has been called by Colonel Lane Fox to the existence of almost exactly similar shell discs, with tortoiseshell fretwork ornamental laminæ upon their faces, to those of the Admiralty Islands in several other places; and he has been kindly shown specimens of these by Mr. Franks, at the Christy collection. Specimens in the collection from two localities have been kindly sketched by Captain Harold Dillon, and woodcuts of them are here appended. In one of these,



brought by Dr. Comrie, from N.E. coast of New Guinea, the shell disc is concave on the surface, on to which the tortoiseshell plate is fitted. The plate must have been softened by heat, in order to make it fit evenly on the curved surface. Several similar ornamental discs, but flat, as at the Admiralty Islands, are in the Christy collection, from the Solomon group. The fretwork patterns in the tor-

toiseshell are far more delicate and elaborate than are the Admiralty Island ones. One of these patterns is figured in the woodcut. It is most extraordinary that exactly similar ornaments are in use at

the far distant Marquesas group, and a fine specimen of one fitted on a head-band, is in the Christy collection. In it the disc, which in the Admiralty and Solomon Island ornaments is made of ground Tridacna shell, is replaced by a disc of mother-of-pearl shell. In all the tortoiseshell disc is fastened to the shell disc by means of a cord, with a knot passed through a hole drilled in the centre of both discs.

The paper was illustrated with maps, drawings, &c., and a large collection of weapons, &c., from the islands were exhibited.

Since the above paper was read, an account of the anthropological observations made by Cap.-Lieutenant H. Strauch, of H.M.S. "Gazelle," has appeared.* The New Hanover Islanders differ from the Admiralty natives to a greater extent than was to be expected. The men wear no covering to their generative organs at all. They wear their hair much more elaborately dressed than the Admiralty Islanders. They wear no cicatrizations or tattooing. They have much more elaborate wood carving in the shape of masks worn on the top of their heads in dancing, &c., and their canoes have elaborately carved prows, and are different from the Admiralty canoes. They have no bows and arrows, and no defensive weapons, but have clubs,

* Allgemeine Bemerkungen Ethnologischen Inhalts über New Guinea, die Anachoreten Inseln, New Hanover, New Ireland, New Britannien und Bougainville, von H. Strauch, Capitain-Lieutenant. "Zeitschr. f. Ethnologie." Bastian u. Hartmann, 1877, Hft. I, s.q.

besides lances. The lances have wooden or bone points. They make them quiver before throwing them. They have no carved bowls like the Admiralty natives. The natives of that part only of the island nearest to New Ireland chew betel, and, unlike the Admiralty Islanders and Humboldt Bay men, they carry their betel and lime in bastbags, not in gourds. They have no temples. They have apparently no sago, but have yams, which the Admiralty Islanders have not. They use the same musical instruments as the Admiralty natives, and wear similar shell and tortoiseshell discs on their breasts, and sometimes a larger disc of this kind is mounted as a breast ornament on a band, with a series of smaller similar discs on either side of it, the ornament thus coming curiously near the Marquesan one. They pallisade their villages, and their better houses have the walls constructed as in the Admiralty Islands, of built up billets of wood, which Captain Strauch thinks may possibly act as stores of firewood as well as walls. The commoner houses are all roof, like many Admiralty ones. The Anachorete Islanders do not wear the ovulum shell. They have only lances as weapons. They have certain houses specially decorated, and with human figures carved in wood placed before them, probably temples.

Captain Strauch's paper is to be continued.

DESCRIPTION OF PLATES XX, XXI, XXII, AND XXIII, ILLUSTRATING THE PAPER ON THE INHABITANTS OF THE ADMIRALTY ISLANDS.

Plate XX.

Fig. 1.—Fore end of lance, with large obsidian head mounted in a socket piece, which is perforated. Elaborately ornamented. × $\frac{1}{3}$.

Fig. 2.—Fore end of short javelin, with irregular obsidian point. × $\frac{1}{4}$.

Fig. 3.—Sheath made of plantain leaf, used as a cover to the obsidian lance heads. × $\frac{1}{5}$.

Figs. 4 and 5.—Lance heads of obsidian, to show the curiously bent and contorted forms which, produced by accidental flaking, are nevertheless mounted as serviceable weapons. × $\frac{1}{6}$.

Fig. 6.—Obsidian lance head, showing a still wider departure from the typical form. × $\frac{1}{4}$.

Fig. 7. Lance head, with the whipping of twine and coating of cement removed to show the manner in which the obsidian flake is inserted in a socket piece, and the socket piece is spliced on to the lance shaft. × $\frac{1}{3}$.

Fig. 8.—Diagrammatic drawing of the socket piece.

b. Wedge-shaped slot for the reception of the fore end of the lance shaft which is cut to fit it.

c. Cavity hollowed out for the reception of the base of the obsidian flake.

a. a. Slots cut in the walls of this cavity to facilitate its being scooped out.

Fig. 9.—Obsidian lance flake removed from its socket to show the simply rounded outline of its base.

Fig. 10.—Fore end of a lance, with shaft of reed and head of hard wood. The head is painted blackish to resemble obsidian. × $\frac{1}{5}$.

Fig. 11.—Hatchet with ground triangular shaped blade of basalt, mounted by being jammed in a cavity at the end of a club-shaped roughly hewn piece of wood. The mounting of this specimen was made on board the "Challenger," being copied from the only such specimen obtained. × $\frac{1}{5}$.

Fig. 12.—Blade of the foregoing.

Fig. 13.—Half-moon shaped piece of mother-of-pearl shell, with edge ground sharp, used as a knife, &c. × $\frac{1}{4}$.

Fig. 14.—Gourd used to carry the shell lime used in betel chewing. Perforated at the stalk end for the stick or spoon. Ornamented with patterns burnt in upon its surface. × $\frac{1}{3}$.

Fig. 15.—Carved head of large hard wooden lime stick or spoon. This belonged to the Chief.

Plate XXI.

Fig. 1.—Disc of ground Tridacna shell, with a second disc of thin tortoiseshell secured on its surface by means of a knotted string passed through a hole in the centres of both. The shell disc is ornamented with engraved lines at its margin. The tortoiseshell disc is perforated with a fretwork pattern. Worn on the forehead or breast. × $\frac{1}{2}$.

Fig. 2.—Disc of tortoiseshell from similar but larger ornament, to show the pattern. × $\frac{1}{2}$.

Fig. 3.—Similar ornament to Fig. 1. × $\frac{1}{2}$.

Fig. 4.—Comb worn by the men with long hair. The teeth are separate pieces of hard wood set in a mass of cement and twine. × $\frac{1}{4}$.

Fig. 5.—Pan-pipes. × $\frac{1}{4}$.

Fig. 6.—Armlet of plaited black and yellow coloured material. × $\frac{1}{3}$.

Fig. 7.—Charm composed of human humerus, bound round with eagles' feathers. Worn suspended round the neck and hanging down the back. × $\frac{1}{4}$.

Fig. 8.—Adze with blade consisting of half a ground Terebra maculata shell. × $\frac{1}{3}$.

Fig. 9.—Adze blade made of ground Hippopus shell. × $\frac{1}{3}$.

Fig. 10.—Knife consisting of obsidian blade in wooden handle. × $\frac{1}{4}$.

Fig. 11.—Beads of ground shell and some black material. × $\frac{1}{3}$.

Fig. 12.—Fish hook made of ground Trochus shell. × $\frac{2}{3}$.

Plate XXII.

Plans and sections of an Admiralty Island canoe and gear, drawn to scale.

Fig. 1.—View of the outer surface of the canoe from the side, showing, below, the hollowed-out body, above which is the single line of plank surmounted by the rounded gunwale piece, the lashings of which are indicated. At the ends are seen the solid end pieces with their single row of ovulum-shells as a decoration. The positions of the supports of the inclined outrigger are shown by three broken struts. The square heads of the thawts and outrigger-booms are seen projecting under the gunwale-piece. The hull is coloured white, the end pieces and ends of the thawts and outrigger-booms being reddened.

Fig. 2.—Plan of the canoe as seen from above. The planks forming the deck are shown lashed *in situ* only on the inclined outrigger, which is necessarily from its inclined position here foreshortened. The struts supporting this outrigger rest against the inside of the canoe, and are kept down by being passed under a longitudinal stay which is lashed to the ends of the booms of the main outrigger, inside the canoe, for the purpose. The thawts *a*, *a*, have their outer ends dovetailed into slots cut in the upper edge of the plank streak, and are secured in position by the gunwale-piece above them. The inner ends of the booms of the main outrigger are secured in a similar manner. Struts *b*, *b*, are fitted in at intervals, which prevent the collapsing of the hull, and strengthen it, and specially strong ones are placed beneath the outer booms of the main outrigger. An extra gunwale-piece is secured over the region of insertion of the outrigger-booms. The main outrigger-booms are steadied in most canoes by two short additional booms and a cross-piece, as shown in the figure, but this additional strengthening is not always present. At about half the entire length of the main outrigger-booms from the canoe a cross-piece is lashed, and it is at the fore end of this cross-piece at the point marked A, that the end of the stay-boom of the mast is shipped. The float is secured at a short distance from the ends of the outrigger-

booms. When the canoe is in use the main outrigger-booms are decked with planks from the canoe-hull as far as the cross-piece A.

Fig. 3.—Transverse section through the canoe in a line with one of the outer booms of the main outrigger to show the amount of inclination of the inclined smaller outrigger.

b. The stout strut fitted under the outer boom of the main outrigger.

Fig. 4.—(*a*.) Thawt showing the dovetailed ends which fit into the slots in the hull and the flanges which rest against the inside of the canoe.

b. One of the struts seen *in situ* in fig. 2. The dotted lines show another form sometimes used.

Fig. 5 shows the means of attachment of the ends of the booms of the main horizontal outrigger to the float. The float is of soft wood (Hibiscus or Thespesia populnea ?). Rows of short sticks of hard wood are driven into the upper surface of this float, being arranged in rows, crossing one another alternately crosswise, and being securely lashed with twine in this position. A rest is thus formed in the upper part of the + where the end of the boom is secured by lashing.

Fig. 6.—Mat sail with its two yards rolled up. Above this the stay-boom with its forked end, into which the tip of the inclined mast is received. Above this again the mast with a hole at one end for the haulyards.

Fig. 7.—Ordinary paddle of one piece, and unornamented. Above this a steering paddle of two pieces and spade-shaped.

Plate XXIII.

Figs. 1, 2, and 3.—Heads of natives taken from photographs. Fig. 2 wears a cap of Dracœna leaf, and has a shell adze over his shoulder.

Figs. 4 and 5.—Upper and under views of ovulum ovum shell worn upon the penis. The shell has diagonal and rectangular patterns engraved upon it. The inner whorls are cut away in such a manner as to leave a sharp cutting edge bounding the narrow opening of the shell, into which the glans penis is introduced. This is seen in Fig. 5. × $\frac{2}{3}$.

Figs. 6 and 7.—Views of opposite faces of stone club from Hilo, Hawai Island, Sandwich group. × $\frac{4}{9}$.

Fig. 8.—Triangular section of the fore part of the same.

NOTE *by* H. N. MOSELEY *on a* STONE CLUB *from the* SANDWICH ISLANDS, *exhibited by him at the Meeting.*

THE stone club now exhibited was obtained by me at a native house at Hilo Hawai Island, Sandwich Islands. I asked the natives to search for any stone implements they could find, and they found this after considerable hunting. They told me it was called "pohaku newa," which means stone club, and that it was used in fighting to strike blows on the head, being fastened to the wrist with a thong or string.

The object appears to be of an altogether new and undescribed form amongst stone weapons. It is made of basalt, with ground surfaces. It is 10 inches in length. It is cylindrical in form at the proximal end, which is grasped in the hand, and tapers towards that end, which is drilled with a hole for a thong. Towards the other end the weapon becomes gradually triangular in section, from being circular, and ends in a point formed by the meeting of three curved but even surfaces, which where they adjoin laterally form three sharp edges.

The club is of especial interest, because it resembles the New Zealand mere, in being a stone club used in the hand without mounting, and being fastened to the wrist by a cord passed through a hole drilled in the handle end. The mere of course differs in its flattened form, but the ideas are the same, and the existence of this Hawaian weapon seems to add another link between the Polynesians and their distant offshoot the New Zealanders.

Mr. J. Park Harrison then read the following report on some recent excavations in Cissbury Camp :—

REPORT *on* SOME FURTHER DISCOVERIES *at* CISSBURY. By J. PARK HARRISON, M.A.

A QUANTITY of chalk, and part of the railing round the pit that was excavated by Mr. Ernest Willett in 1874, having fallen in during the winter of the following year, a rock sill or step, 5 feet 6 inches in length, was exposed to view, 14 inches above a ledge already known to exist in the solid chalk rock, on its eastern side, 9 feet below the surface of the ground.

The slip occurred at the spot where a steep slope of loose chalk had afforded means of access to the pit eighteen months ago,* and the chalk at the back of the chasm produced by the accident, now seen in section, indicated unmistakeably that it was part of the filling in of another excavation. The "step" itself

* See Journal, Vol. VI, p. 263.

was covered with a thick seam of red clay, from which numerous flakes cropped out.*

As it was of real importance, owing to the occurrence of distinctive marks on the walls of Mr. Willett's pit, that the relative ages of the two excavations should be ascertained, and a careful search made for anything that might confirm, or otherwise, the antiquity of the characters alluded to, the discovery that had been made was at once communicated to Major Wisden, who readily consented to postpone the filling up of Mr. Willett's pit, which had been decided on, and also promised himself to assist in the new exploration so far as his engagements permitted.

Subsequently Mr. E. W. Brabrook, F.S.A., and Captain Harold Dillon, F.S.A., Directors of the Institute, were able successively to devote several days to the work; and the proposed exploration at Caburn having been put off to another year, owing to Colonel Lane Fox's pressing official duties, the excavation at Cissbury was undertaken by us, and adopted by the Exploration Committee as supplemental to the work which had been carried on earlier in the summer at Seaford.

Operations were commenced on October 4th, on which day three of Mr. Ballard's principal workmen, who had been engaged in the excavations under Colonel Lane Fox last year, were directed to employ the early hours in clearing out a trench in the *débris* that had accumulated in Mr. Willett's pit, along its eastern side, to see whether any galleries ran under the adjoining excavation. Whilst so engaged, part of the rock face, which had probably been shaken by the fall of chalk from the "step" above it, gave way, and revealed the existence of a cave 5 feet 6 inches in width, clearly belonging to an adjoining pit. The roof had partly fallen in, and on looking through the aperture we ascertained that the space above was filled with chalk rubble, which had formed itself into a natural dome or vault. Half of a rude flint implement, which when perfect may have measured 8 inches in length, and a minute fragment of bone, apparently a portion of the thinnest part of the scapula of deer, were the only remains that were found amongst the blocks of chalk in the cave.

Immediately adjoining, on the south side, a short gallery ran from Mr. Willett's pit in an easterly direction, widening, at 4 feet from the entrance, into a chamber 7 feet long and 5 feet wide, at the end of which was a small aperture in the chalk rock, 10 inches long by 5 inches high. This was the "window"

* Mr. Willett, who did not wish to undertake any further excavations himself at Cissbury, mentioned that he noticed in 1874 a floor of red earth at a depth of 5 feet from the top of his pit; and also another 8 feet from the bottom. The latter would appear to have been due to the silting which poured in over the "step."

which Mr. Willett had supposed might perhaps have been used for communication with the occupants of another shaft.*

The excavation of the new pit was now proceeded with, great care being taken to follow the seam of red clay already alluded to, as well as all other indications of natural or intentional filling in. The following summary of the work accomplished on this and the following two days, during which he was present, is derived principally from notes taken by Mr. Brabrook.

The pit, so far as disclosed at this date, presented the following features :—

1. At the top, a filling in of chalk rubbish, intermixed with large blocks, some of which approached to within 6 inches of the surface.

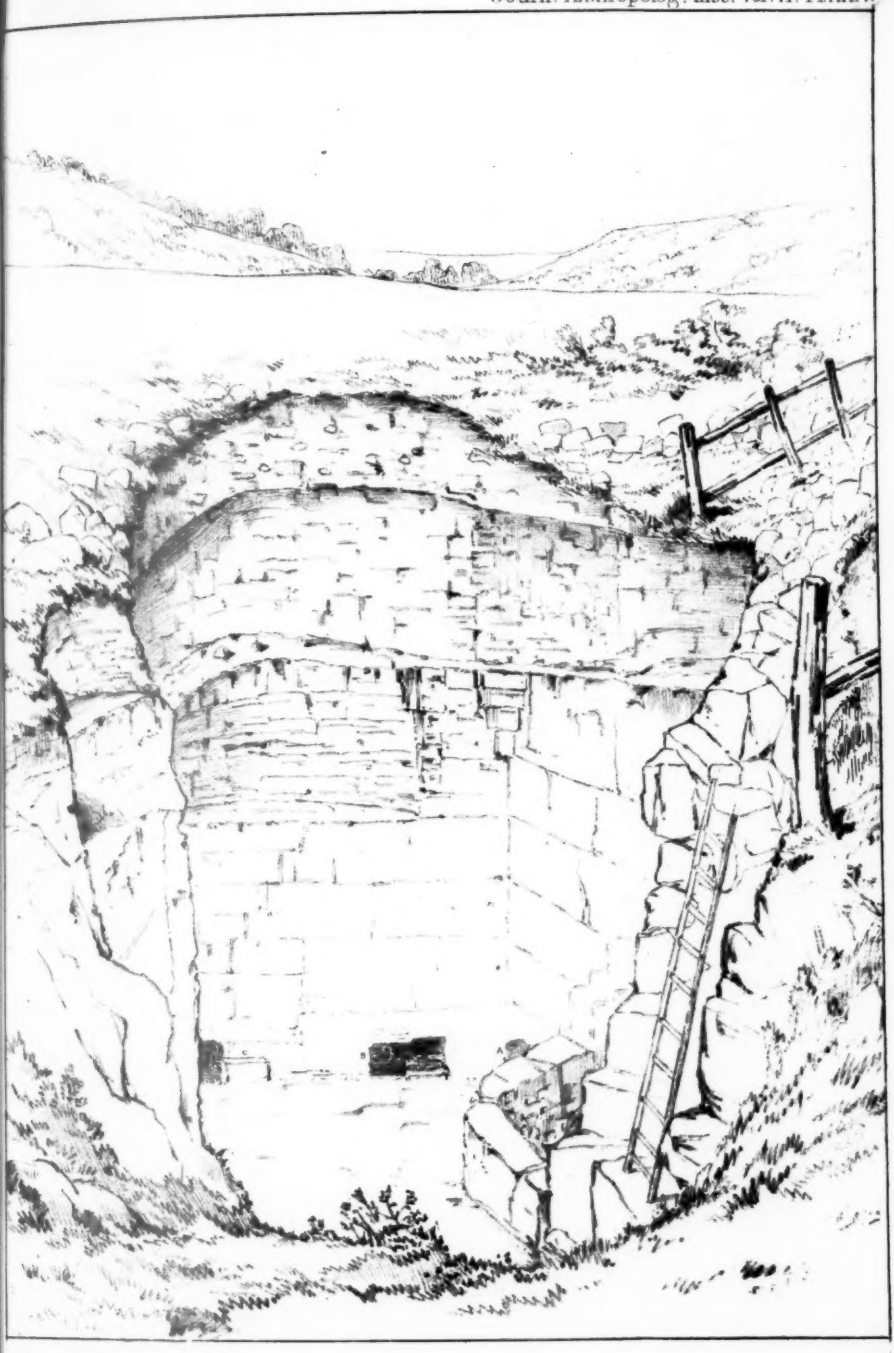
2. A layer of red clay reaching from the top of the pit, at its eastern side, and slanting down to the level of the step into Mr. Willett's pit. In this clay we found abundance of flakes of all sizes, and several rudely fashioned flint implements. They were mostly between the step and the centre of the pit. Only one piece of stag's horn was met with above the 10 feet level.

3. Under the red seam there was the usual filling in, consisting of angular chalk.

The shape of the upper half of the pit is peculiar. At the eastern side is an apse, 10 feet wide, along which, about 9 feet below the surface, there is a platform, 3 feet deep in the widest part. On the south, separated from this main stage by a narrow ledge 10 inches in width, there is another platform or recess, 5 feet 6 inches in length and 3 feet wide in the centre. A curious projection like a square pilaster or buttress, descends from the southern extremity of the apse, and it was afterwards found to stop near the level of a second stage 5 feet 6 inches below the principal platform, and immediately under it. The whole width of the pit (including two recesses subsequently excavated on the north side, opposite to the recess on the south) is 20 feet, and the breadth from the step to the east wall of the apse 17 feet 6 inches.

Several of the blocks of chalk that formed part of the filling in of the pit bore marks, some of which may perhaps have been the work of insects. Two or three, however, seemed to deserve more attention. They commenced with a small bulb, and continued in a line, as if some tool had been first pressed into the chalk, and then drawn evenly along it. One of the blocks appeared to bear even stronger evidence of design, for the marks

* Two or three blocks of chalk appeared to have been put on one side by the workmen in this gallery; one of them was marked with a straight line terminating at both ends with a small circular indent. A similar mark was found in the second escarp pit.



CAVE PIT, CISSBURY.

were arranged parallel to each other, and showed such difference of character as might lead to the supposition that they had some definite meaning. (Pl. xxv, 5.) The block itself was stained both in the marks and on its surface by percolation from the red seam; and, it should be added, had escaped the notice of the workmen, owing to the above cause, and the faintness of the characters. It was thrown out from a depth of about 5 feet at the north-east corner of the pit.

On the west an angular mass of chalk rock projected into the pit to a distance of 7 feet, and, as we proceeded with the excavation, advanced eastwards in irregular and narrow rock steps. It was beneath this abutment that the cave we had accidentally discovered still lay concealed, under the chalk rubble that covered it in common with the lower half of the pit.

Having broken off work for a week, on resuming, the chalk was by degrees carefully removed from the neighbourhood of the projecting rock, most of the loose rubble which covered it being for the present left undisturbed in order to preserve intact a seam of fine white concrete 3 or 4 inches in thickness, which appeared to slope from a point 2 feet or so below the step at an angle of about 45° or 50°.

Blocks of marked chalk continued to be turned up. They had a variety of figures on them, and were found almost exclusively near the east wall, and at the south-west corner of the pit. *None were met with below a level of* 15 *or* 16 *feet.*

One of the most curious of these blocks was afterwards lost.*

On the east side of the pit we noticed numerous well shaped unbroken flints; 40 were collected in a space of about 2 square yards. They were found at a level of from 12 to 15 feet below the surface; and the only well finished implement in the whole pit was lying near, and appeared to be associated with them. It could hardly have been an accident also that, at a distance of two or three yards to the west, there were a number of useless flints with long fingers and excrescences. They appeared to have been sorted and thrown aside. It seemed to show that the pit was used whilst gradually filling up by degradation from the walls, though no trace existed of a trodden floor such as Mr. Willett noticed half way down the adjoining pit, where, however, there had been a deposit of red clay. If at this period no care was taken to keep the pit clear of chalk *débris*, the flints may have been accidentally buried.

Charcoal, which was first noticed about five feet east of the step, at 12 feet from the surface, was met with in increasing quantities in the white seam as it approached the south and east

* It had been placed on a ledge with other blocks, but could not afterwards be found. It may have fallen into the pit.

sides of the pit, at a level of 16 feet: and it was here that the only two pieces of deer's horn, of any size, were exhumed. They lay about six feet apart, and appeared to have formed part of one antler.

From this level to the floor of the pit, the plan followed the rectangular formation of the chalk rock. It consequently lost the amphitheatre appearance that it had displayed when seen from the surface (see Pl. xxiv). The width at the 20 ft. level was 14 feet 6 inches, and the length 14 feet 9 inches.

The first gallery that was uncovered was near the E.S.E. corner. Over the entrance, which was 2 feet 6 inches in height, and 4 feet wide, Captain Dillon, who was now at Cissbury, and near the spot at the time, noticed several lines or scores. They were of precisely the same light yellow tint as the chalk rock itself, which had also been remarked in the case of the characters found in Mr. Willett's pit; but they did not seem, as those were, to have been made with a flint instrument. The marks were arranged in two rows; the upper one consisted first of six vertical lines, followed after a blank space of 4½ inches by four more lines, the last of which was irregularly curved. From two of the lines (the second and sixth in this upper row) a branch stroke inclined upwards at an angle to the right (see Pl. fig. 7). In the second row, there were four vertical lines, and three of these also appeared to be compound. The marks were well protected in a deep recess formed by the corbelling over of the chalk rock. The gallery, at the entrance of which they occur, is marked C.

In addition to the above marks, on the west jamb, just within the gallery, were two perpendicular lines of equal length. And on the left side of the entrance, on the outside wall was a long deep cut, and several finely incised branching lines.

Whilst proceeding with the excavation along the south side of the pit, two more galleries (marked A and B) were discovered by the workmen before we arrived on the hill. Over the entrance of gallery B, which ran in a remarkably eccentric course to the S.W., there was also a set of marks scratched upon the wall. They consisted of three horizontal and nearly parallel lines of unequal and gradually decreasing length, the upper one, or longest being 1 ft. 1 ins., and the second and third 11 ins. and 10 ins. respectively. These marks were made apparently by some bluntly-pointed instrument. A detached block of rounded chalk which was lying just inside of the gallery B, was scored with lines deeply cut with a flint; but they had no distinctive character, and we at first thought that they had been made by the shovel of one of the workmen. The third gallery (A) ran south from the corner of the pit. The chalk at the entrance

MARKS FOUND IN CAVE PIT, CISSBURY.

was much disrupted, and there were no marks to be seen. Six feet within it we found the little window alluded to as existing at the east end of the cave in Mr. Willett's pit; and near to it there was a small horn pick in excellent preservation. It was the only instrument of the kind found in the excavation.

A considerable quantity of charcoal was met with in the chalk seam at about 4 feet from the south and east sides of the pit, at a height of about 4 feet from the floor. It was not found near to the walls, except on the south side opposite to the entrance of gallery B, where we came upon a hearth or fire-place, formed of large blocks of rounded chalk, which were much calcined and blackened with smoke. They formed part of a wall of rubble, which ran for a length of several feet in a line nearly parallel to the south wall of the pit, and was capped with the white seam already alluded to. A piece of stag's horn, 10 inches long, burnt and blackened at one end (indicating that it had been used to stir a fire), was found in the chalk *débris* close to the fire-place.

On continuing the four-feet trench along the east side of the pit, two more galleries were discovered (D and E). There were no marks visible at the entrances or upon the walls inside. In gallery E Captain Dillon found a piece of hard stone $5\frac{3}{4}$ inches long by $2\frac{1}{4}$ inches thick. It was of a quartzite nature, similar to one found by Mr. E. Willett in his pit.

Several rude implements, worked to a point (one with a natural handle of unworked flint, 3 inches long) were turned up near the north-eastern corner. All the galleries were sufficiently free from chalk rubbish to allow of access almost to the end of them. Captain Dillon was consequently able to obtain their dimensions without any great difficulty, by simply moving on one side the larger blocks that had fallen from the roof. Time did not permit us to clear out the *débris*, which may perhaps conceal much that would be interesting and important as regards the history of the pit. In a branch-gallery running northward from the gallery E—the only one that was thoroughly explored—Guiles, our foreman, found two rude but effective flint instruments, with wide cutting edges, and unworked handles, and a scapula of deer.

In the right, or south branch of this gallery (E) we noticed a feature that has not been seen elsewhere. About 10 or 12 feet from the end there occurs an abrupt alteration in the height of the roof, and on the vertical face of the rock, which forms a pseudo-lintel across the gallery, there were three tine holes, showing that it had been intended to carry on the excavation to the end at the same level of ceiling, but for some reason the work had been discontinued. A good deal of broken chalk

which it was difficult to remove on this occasion, prevented further exploration, and the question must remain at present unanswered, for what purpose this extension was made at a height so inadequate for the work of extracting flint.

At the north-east corner of the pit we uncovered the entrance to the 6th gallery (F). It appeared to have been purposely closed with two large blocks of chalk, so firmly wedged into the opening, that it was necessary to hack them to pieces before they could be removed. It was at first difficult to decide whether there had been any aperture. On removing the blocks, however, Captain Dillon found a cave which opened into a spacious chamber 11 feet in diameter, and 5 feet high. It was almost clear of rubble, excepting at the west side, and communicated by a gallery 20 feet long with one which ran N.N.E. from Mr. Willett's pit. These two galleries, and the "Dome" chamber were cleared out in 1874 by his workmen.

The remains of a bat, which had doubtless obtained access by these galleries, were found in the dome-chamber, and also part of the cover of a "Bradshaw's Guide," dated "Sept. 1875." The galleries intersected at a point about 16 feet from their respective entrances; and the hole between them had all the appearance of having been the result of accident.

The existence of the cave under the projecting rock having been ascertained at the commencement of the excavations, and every care taken to preserve any original features connected with it, we now commenced the work of clearing the white seam from off the chalk rubbish with which it was still more or less covered. It had been preserved to the last moment in expectation of a visit from Colonel Lane Fox; but at length it became necessary to break it up in order to proceed with the excavation. Whilst this was being done, with great care (much of the chalk concretion being removed by hand), the important discovery was made that the blackened chalk blocks at the back of the hearth formed part of a rubble wall, which had been built for the purpose of filling in the original entrance to the cave. On each side the chalk rock, though barely twelve inches thick, still remained *in situ*, and formed the east and south sides of the cave: the walls were a little over three feet in height. A kind of burrow through the chalk rock, 1 ft. 6 ins. wide, and 1 ft. 3 ins. high, had apparently been made in place of the old entrance, quite in the corner of the pit, close to gallery A. As a number of broken flints and pieces of chalk rubble filled the aperture, it may be assumed that they were placed there after the roof of the cave had fallen in, and the passage rendered of no further use.

The cave was found to be 7 feet long and 5 ft. 6 inches wide.

On the north, and partly on the west sides, the chalk rock still partly covered it; and this was so on the south-west side also, before we cleared away the loose chalk, which had fallen in when removing the white seam: the jar perhaps caused a portion of the rock-covering to separate from the wall behind, along the line of cleavage; and owing to its fall, part of the south wall of the cave was broken down, and the passage above alluded to partly destroyed.

There now remained the north-west corner only of the pit to be explored; and it was whilst we were clearing away the chalk from the north side of the projecting rock, that Colonel Fox made his long wished-for appearance. A sufficient quantity of the white seam still remained in places to show the angle at which it originally sloped: and he was able to examine the site of the hearth, and the east wall of the cave, as well as a curious recess cut in the north side of the rock at a height of about four feet from the floor of the pit, 4 ft. 3 ins. in width, and 3 feet deep. It had just previously been exposed. Beneath it, we subsequently uncovered the entrance to a second cave. It communicated by a window with the dome-chamber, and appeared to lead into Mr. Willett's pit; some rubbish that had evidently been thrown in from the surface in 1874, being noticed at its western end. Being alone, and unable to stay longer at Cissbury, the point whether there was originally any communication between the pits had to be left for future examination. The entrance from Mr. Willett's pit had been concealed on that side by the chalk *débris*.

After protecting the walls of the cave and entrances to the galleries with blocks of chalk, the tent was struck which Mr. Ballard had kindly pitched for us, and the work was discontinued.

It would be premature to give any decided opinion as to the relative dates of the two pits. But there are some considerations which lead to the belief that Mr. Willett's was excavated some time after ours. 1st. Long galleries radiate from it in all directions, excepting towards the adjoining pit. The only gallery running eastwards stops short at a distance of 11 feet from the entrance —the south gallery from the adjoining pit cutting off further extension in that direction. 2nd. The red seam, which crossed the adjoining pit from its east or high side, entered Mr. Willett's pit at the level of the step. 3rd. The hoard of unused flints found rather more than half way down our pit, seems to point to a time when flints were being extracted from the galleries of Mr. Willett's pit: and 4th, the marks in the galleries of Mr. Willett's pit (assuming them to be genuine) appear to be of a later date than those at the entrance of the galleries in the adjoining pit.

The "Cave Pit" itself may be of an age intermediate between the smaller shafts in the ditch of the camp, and Mr. Willett's pit.

As regards the form of the flint implements, a large proportion, more than one-third of the whole number found in our pit (25), are of a type that is not common at Cissbury., viz., with one end sharply pointed; the other being unworked. One or two of the same form were found in or near the great pit, which it will be remembered was also sunk in stages, although there, the unusual size of the excavation, appeared to account for the plan.

No sling stones, or potsherds were met with in our pit, and no shells excepting Helix nemoralis, and these only about 4 or 5 feet from the surface. Also, with the exception of the scapula of deer found in gallery E, and two minute fragments of bone, not sufficient for identification, and the bone-implement with a rounded point, which may have been used for forming marks on the chalk, and was found about 12 feet down in the pit, animal remains were entirely absent.

It should be mentioned that there was no indication on the surface of the existence of the pit. This was accounted for by finding that a quantity of chalk had been placed on the site at a later date. Some of the blocks were of considerable size, and approached within 6 inches of the turf. They were mixed with a quantity of dark-coloured vegetable mould.

Flints had evidently been extracted from the galleries; but the floor of the pit being between 2 and 3 feet below Mr. Willett's, they were nearer the roof than in that and some other pits.

Discussion.

Professor Rolleston said with reference to Mr. Park Harrison's views as to the marking on the chalk blocks from Cissbury, that he thought they might very reasonably be supposed to have been made by one of the savages in some moment of fidgetty restlessness, such as savages of all kinds were subject to. Taking one of the deer-horn picks into his hands which had a small and pointed brow-antler, he showed how easy it was to make similar marks with such an instrument upon the chalk blocks before them.

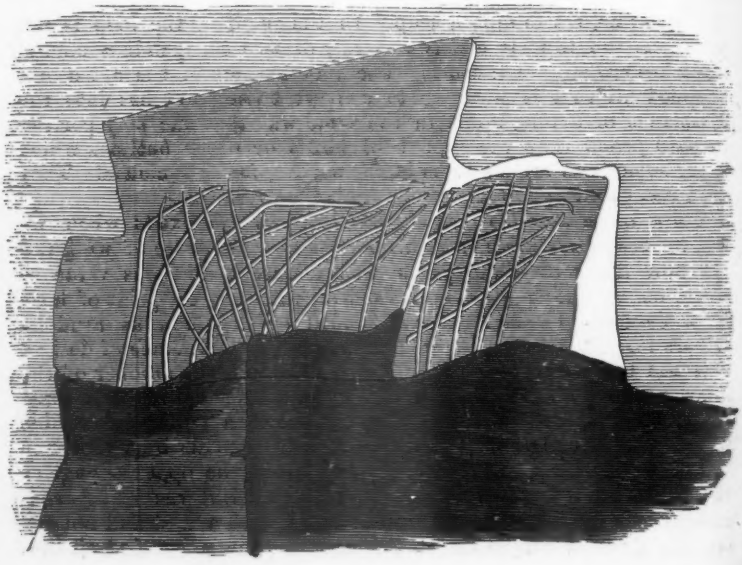
The President: As Mr. Harrison has again referred to the marks found upon chalk in this and other pits, and he appears still to hold to the opinion that some of them represent a written character of some kind, I think it is only right that, having been associated with him in some of these excavations, I should express clearly my dissent from his views upon this particular point. Any discovery of this nature would create such a revolution in our views of the condition of the early inhabitants of this country in the stone

age, that although we must, of course, be prepared at all times to receive new truths, we ought not lightly to accept an assumption so much at variance with all collateral evidence as would be the hypothesis that the people who made these shafts and galleries in search of flints for implements, were acquainted with writing. In my remarks upon Mr. Harrison's last paper, I expressed myself with all due deference to the undoubted sincerity of the convictions of my friend and colleague upon this subject, but since then in publishing the paper in the Journal, a postscript has been added at page 269, No. III, vol. VII, which, as I have not before had an opportunity of seeing, it appears to me to call for a more decided protest. In this postscript woodcuts are given, which profess to be representations of the marks upon the chalk. The marks are there represented in clearly defined black letter type, and as such must inevitably convey to any one who might read the postscript the impression that the originals were designed for some definite purpose. But if any one will compare these marks, as shown in the postscript, with the originals, some of which are preserved upon the chalk, and are exhibited this evening, he will at once perceive that all the sharp decision of outline which in the wood-cuts suggests the idea of written characters, are wanting in the originals, which in reality are merely the rounded impressions of the deer-horn tools with which the shafts and galleries were originally excavated. Take, for example, the five marks resembling commas on the 14th line; here the heads of the commas represent the spot where the tool first came in contact with the chalk, and produced a hole, whilst the tails represent the grooves formed by the tool, as it slipped away from the point of impact. Take also the second figure on the 18th line, resembling a loop. In the original, the loop is not joined at the top; it consists merely of two independent curved scratches crossing each other. The imagination of the artist has supplied all that is wanting to convert these scratches into the semblance of letters, much in the same way that one may portray in hard pencil lines the figures of heads or other outlines which fancy sometimes reveals to us in the fleeting forms of clouds. They are ideas based upon the reality rather than real facts.

I am quite sensible of the temptation which exists when we see, for the first time, marks uncovered after the lapse of we know not how many thousand years, to attribute a fictitious value to them, but all the scratches formed with the rounded point of horn show evidence of having been formed quickly and at random. Others formed with a sharp tool, however, show evidence of design, of these the monogram shown on page 264 of the number of the Journal above referred to, is evidently an intentional mark of some kind; but then its position at the entrance of a gallery, accessible to the public, renders it probable that it was made by a visitor in the same manner as the very obvious 16 on the opposite page or the name of *William Penfold* adjoining it. But the other ornamental scoring or chequed pattern formed with a flint and noticed on the sides of the shaft at the time it was uncovered, is un-

doubtedly to be attributed to the pre-historic workers. In my paper on Cissbury, at page 374, No. III, vol. V, I noticed a somewhat similar set of marks over the entrance to one of the galleries in No. 2 Escarp Shaft. But although I actually saw some portion of these marks uncovered, I was led to suspect some trickery from the fact that the flint had scratched away the ferruginous oxide with which the surface of the chalk was covered, leaving the marks white. I, however, though doubting their antiquity, took a careful tracing of them, which I now exhibit.

Now the marks found in this shaft of Mr. Harrison's presented precisely the same appearance. Not only was the ferruginous oxide scratched away by the flint, leaving the marks white, but at the time I examined it, I found that the surface was also covered with little black specks, resembling dendrites or fly-marks, and not one of these appeared in the marks. We see, therefore, that as the genuineness of this latter scoring is vouched for by Captain Dillon, who uncovered the whole of it with his own hands, the oxide and the black specks have not reappeared in the marks, notwithstanding the length of time that must have elapsed since the latter were formed, and this attests the gennineness of the former marks found in No. 2 Escarp Shaft. The scoring, it will be seen, has a close analogy to the ornamentation of Australian savages. The most primitive attempts at ornamentation appear to consist in covering the surface of an object at intervals with lines bearing the impress of human design; we see, here, the stamp of a people in the lowest condition of art. For the rest, I see nothing either



in the form of the shaft or in the position of the chalk blocks which Mr. Harrison has noticed, to indicate that this shaft was either constructed or used for any other purpose than those which have been described previously, viz., for the extraction of flints. And I wish I could feel so confident of many pre-historical deductions as I do of the fact that nothing of the nature of a written character has ever been found in Cissbury. I should be sorry, however, if any opinion of mine were to deter Mr. Harrison from making further investigations into this interesting subject.

Mr. PARK HARRISON, in reply, said he regretted that the discussion had touched so slightly on the structural peculiarities of the pit, and the interesting fact that it, for the first time, afforded evidence of habitation. As regards the question whether the marks were accidentally made by horn picks, the idea was absolutely untenable. They have been found in very few pits and galleries at Cissbury, and Canon Greenwell had informed the meeting that he met with nothing like them in the excavations at "Grimes' Grave." A close examination, too, would show that the majority of the marks were either cut with a flint, or some sharp instrument, such as pointed bone. (See Figs. 1, 2, 3.) Incised lines have now been found in three pits at Cissbury, over, or just within the entrances of two galleries in each pit. They may be symbols of ownership, or religious charms: and some, perhaps, hieratic characters of great antiquity. Even if idle marks, it can scarcely be doubted that they had some meaning. Whether or not any of them are sufficiently like archaic forms to justify the suspicion of a common origin with early letters, is a question that must be left to paleographists to decide.

Though sufficient for the purpose of illustrating what was said in the text, the little wood-cuts did not pretend to be *fac-similes*. It had been intended to have a plate of marks, but this was unavoidably postponed. Only a few of the marks were thought to be like early characters. The "commas," or curved signs, as already said in the Report, were made with deer's-horn instruments, but, in his opinion, not accidentally, otherwise the edges of the little pits would have been jagged. represents the left hand character in fig. 2 with as much accuracy as is possible, or usual with such small cuts (see Pl. xxiv). As regards the loop in fig. 5, a minute portion of the upper part of the figure appeared to be broken off; and if so, it seemed to be probable that the curved lines would have met. The loop was too wide in the little wood-cut referred to. The marks cut in Mr. Willett's pit [16] differed totally, both in colour and execution, from the name and date, which were slightly scratched at a short distance above them. Col. Fox speaks of this pit as having been accessible to the public; but this, as explained on a former occasion, was not the case until steps were cut in the chalk. W. Penfold was presumably the only person who reached the bottom after the excavation was finished, for there was no name but his, and no initials whatever on the

chalk walls in September, 1875, which could scarcely have been so, if many persons had made the descent.*

In reply to Prof. Rolleston, Mr. HARRISON said that there was no evidence whatever that the skilful miners of Cissbury were savages. They were, probably, in much the same state of culture as the Eastern Islanders, whose priests understood symbolic writing, though the characters they used were engraved with flint, i.e., obsidian, tools. Professor ROLLESTON'S experiment showed conclusively this much at least, that the marks were intentionally made.

DESCRIPTION OF PLATES.

Plate XXIV.

Isometrical view of the cave-pit at Cissbury, showing the position of the marks over the entrance of gallery C, and the remains of cave.

Plate XXV.

Marks on the chalk-rock, and upon detached blocks in the cave-pit.

Figs. 1 to 6, inclusive, are from photographs.

Fig. 7.—Rune-like marks over the entrance of gallery C, reduced from a full-sized drawing and rubbings made by Mr. G. M. Atkinson.

JANUARY 23RD, 1877.

Colonel A. LANE FOX, F.R.S., *President, in the Chair.*

The minutes of the previous meeting were read and confirmed.

The following presents of books to the Library was announced, and thanks were ordered to be returned to the donors for the same:—

FOR THE LIBRARY.

From the BERLIN ANTHROPOLOGICAL SOCIETY.—Zeitschrift für Ethnologie. Nos. 2—5, 1876.

From the EDITOR.—Matériaux pour l'Historie de l'Homme. December, 1876.

From the IMPERIAL ACADEMY OF SCIENCES, VIENNA.—Seitzungsberichte Philos-histor Classe. 80 Bd., Heft 4; 81 Bd., Heft

* By mistake 6 was said (p. 266) to have had the value of *l*, at a very early date, in the East; it should have been *b*. This was also the force of the letter in Neo-Carthagenian. Dr. Haines thinks the curved lines in the "loop mark" originally crossed each other, and so formed an early rune.

1, 2, 3; 82 Bd., Heft 1, 2; ditto Math-naturio, 1875, I, II, III Abtheil, Nos. 6—10, 1876; II Abtheil, Nos. 1—3; Almanack for 1876.

From the Institute.—The Canadian Journal. Vol. XV, No. 14.

From the Editor.—Revue Mensuelle de Médecine et de Chirurgie. No. 1, January, 1877.

From the Editor.—Revue Scientifique. Nos. 29, 30.

From the Editor.—Nature (to date).

From the Association.—Journal of the Royal Historical and Archæological Association of Ireland. Vol. IV, No. 27.

From James Heywood, Esq., F.R.S.—The Primæval World of Switzerland. 2 Vols. By Professor Heer.

From the Author.—Across Africa. By Commander Cameron, R.N., C.B.

From Professor Virchow.—Die Zuleund Mittel der moderum Anthropologie; Die fünfte allgemeine Versammlung der Deutschen; Gessumntsitzung der Akademie; Uber einige Merkmale nudere Menschenrassen am Schädel; Beitrage zur Physischen Anthropologie der Dutschen, 1875.

From A. L. Lewis, Esq.—Anthropologia (Supplement to).

The election of a new member, Rev. C. N. Barham, of Hanshaw, was announced.

The President then read the following report to the Anthropometric Committee of the British Association:—

Report *by* Col. A. Lane Fox, F.R.S., Commanding 48th Brigade Depôt, *on* Measurements *taken of the Officers and Men of the 2nd Royal Surrey Militia according to the General Instructions drawn up by the Anthropometric Committee of the British Association.*

The 2nd Royal Surrey Militia having been called up at Guildford for its annual course of training in the month of May, 1876, I took advantage of the opportunity thus afforded to obtain careful measurements of the whole of the officers and men of the Regiment according to the instructions drawn up by the Anthropometric Committee of the British Association.

The measurements of the individuals included in these returns, 459 in number, exclusive of 18 officers, are available for the purpose of being arranged with others by the Committee in such a manner as may be thought desirable in carrying out the investigations and comparisons that may hereafter be determined upon.

I desire, however, in the first place to say a few words upon the probable advantage of employing an entire regiment collectively as a unit of comparison with similar returns of other regiments or bodies of men obtained in different localities.

The Brigade Depôts afford all the required organisation for taking the statistics of militia and volunteers in their respective counties, with the control necessary to ensure accuracy. It is therefore desirable to consider how far a militia regiment may be taken to represent the physical capacity of the working classes of the district from which it is drawn, and I have arranged the several measurements of the 2nd Surrey Militia in curves according to Mr. Galton's method with a view to assist this inquiry.

Unlike a Regiment of the Line or other branch of the regular army, a Militia regiment is recruited almost exclusively from the neighbourhood of its head quarters. Out of the 459 men comprising the 2nd Surrey Militia it will be seen by the returns that 421, or about 92 per cent., were born in adjacent counties of Surrey, Sussex, Kent, Berkshire, Middlesex, and Hampshire; of these by far the larger number are from Surrey, and the rest are drawn chiefly from the portions of the neighbouring counties which are nearest to Surrey; so that the whole may be said to be derived from within a radius of twenty miles, having Guildford as a centre. The remaining 8 per cent. who are not from this district consist chiefly of the non-commissioned officers of the permanent staff who are at present drawn from different Line regiments, and of men whose place of birth is unknown.

The returns might perhaps have been rendered in some slight degree of more local value if these men had been excluded, but attention was not drawn to the point until too late to alter the returns and diagrams. In proportion as the scheme for the localisation of the Forces comes into more general operation, the permanent staff will tend more and more to become county men like the rest of the regiment.

The following is a return of the nationalities of the 459 men composing the regiment in which the designations are rendered in accordance with the General Instructions under the head of "Origin":—

Very pure English.	Pure English.	English.	Very pure Irish.	Pure Irish.	Irish.	Mixed E. and I.	Otherwise mixed.	Very pure Scotch.	Very pure Welsh.	Not known.
374	34	4	19	3	1	11	10	1	1	1

From this it will be seen that 89 per cent. are pure English, and 81 per cent. very pure English. The rejecting standards of enlistment affect to a certain extent, but only in a slight degree,

the value of the returns as representing the physical condition of the inhabitants of the district. Men who are below the following standards are rejected for the militia, viz., height, 5 feet 2 inches; chest measurement, 32 inches; age, 16 years. These standards are low, and, although they do undoubtedly alter the averages of the regiment, yet, by reducing the measurements to curves, we are enabled to judge how far they really do affect the several measurements to which they apply.* Thus on referring to Table No. 2, representing the heights, it is seen that the rejecting standard of 5 feet 2 inches renders the curve somewhat abnormal by diminishing the downward curve on the left side which would have been formed by men exceptionally below the average, but without in all probability materially affecting the central and upward portions of the curve, which may still be taken to represent, in so far as any such small number of men can represent, the ordinary and highest stature of the population.

On the other hand, the probability that men of very superior physique are more likely to obtain regular employment in civil life, and therefore less likely to join the militia, may be taken to counterbalance the rejecting standards on the other side; so that in a view of the whole conditions of enrolment, a militiaman may, I think, be fairly taken as an average representative of the working-classes of his district.

It may perhaps be thought that the drill which a militia-man undergoes would have the effect of expanding his chest, and thus of raising the average of the militia in regard to this measurement, above that of the population generally, but considering the militia are only under training for one month in the year, and the very small portion of that time which can be devoted to setting up drill, I have no reason to suppose, viewing also the general appearance of the militia as compared with the Line in which drill has doubtless considerable effect, that the chest measurement of the militia is affected in any sensible degree by their training.

It must, however, be remembered that whilst the pay of the militia is uniform throughout the country, the wages of the labouring classes vary in the different counties; and this must without doubt have the effect of enlarging the field of selection in those districts in which wages are low. To what extent this affects the physique of the militia we have at present no means of determining.

Making due allowance for the disturbing elements above mentioned, there can, I think, be little doubt that a comparison

* The diagrams showing the curves are not given here. They can, however, easily be drawn from the tables given at the end of this paper.

of the various militia and volunteer regiments throughout the country would be a means of aiding materially the investigations of the Anthropometric Committee.

I now make a few observations on the several measurements.

Origin.—More definite instructions ought, I think, to be given as to the mode of returning men as town or country folk. Men living in a country town of 10,000 inhabitants, such as Guildford or Farnham, very usually work in the country, and have all the advantage of country air, whilst men living and working in the same towns at indoor occupations, such as bakers, shopkeepers, &c., though living under very different conditions of life, are liable under the present instructions to be included with them as townsfolk. In order to render the returns of scientific value, uniformity should be secured on this head. The following is the proportion of each class in the 2nd Surrey Militia, by which it will be seen that, following *my own* definition of town and country folk, 79 per cent. are country folk, and 72 per cent. very pure country folk, that is to say men who, together with their two parents and four grandparents, have worked habitually at out-door occupations in the country:—

Very pure country folk.	Pure country folk.	Country folk.	Very pure town folk.	Pure town folk.	Town folk.	Mixed.	Total.
329	27	7	27	11	11	47	459

Height.—The height has been taken without shoes and stockings.

Weight.—In ordinary clothes, but without jacket or boots.

Eyes and hair.—Tables of numbered colours, such as are used in Mr. Broca's tables,* drawn up expressly for European shades of hair and eyes, might be useful, but they should be referred to Mr. Broca's standards, to avoid confusion. General terms, such as sandy, auburn, &c., are liable to be variously employed by different observers; the patches should, if possible, be 4 inches square, to ensure quickness and accuracy.

The following are tables of the hair and eyes of the 2nd Surrey Militia:—

* Mr. Broca's tables are given in the Anthropological notes and queries for the use of travellers published by Mr. Stanford, Charing Cross, for the British Association.

HAIR.

Red.	Auburn and Sandy.	Light Brown.	Brown.	Dark Brown.	Black.	Total.
2	7	57	253	138	2	459

EYES.

Grey.	Light Blue.	Blue.	Dark Blue.	Light Brown.	Brown.	Dark Brown.	Total.
219	3	89	15	0	132	1	459

From the foregoing tables it will be seen that 47 per cent. are returned as having grey eyes. Taking grey, blue, and light blue together, but excluding dark blue and the various shades of brown, the proportion of light coloured eyes amounts to 67 per cent. On the other hand, the number of dark-haired people returned as having brown, dark brown, or black hair, but excluding light brown, sandy, auburn, or red, amounts to 86 per cent., and of the seven men returned as having auburn or sandy air, one is a very pure Scotchman, one a very pure Irishman, and one of mixed descent, leaving only four men of English extraction in the whole regiment with hair of that colour.

From these tables it may be affirmed with some degree of certainty that the distinguishing characteristics of the inhabitants of this district consist of grey or blue eyes, with brown or dark brown hair. Out of the 133 men returned as having brown or hazel eyes, there is no instance of red, fair, or sandy hair, and 61 of this number have dark brown hair.

Girth of chest.—The men were all measured naked, except the officers. The allowance made for measuring with the shirt and under waistcoat on should be 1 inch, but it is dependent on the thickness of the shirt.

Breathing capacity.—Coxeter's spirometer was found suitable upon the whole, but appears capable of some slight improvement. The india-rubber is liable to wear into holes at its junction with the brass tube of the stopcock. It would be an improvement if the brass piece were at such a distance from the side of the bag as not to interfere with the rolling up. Most of the men had two or three trials, and some of them required as many as six or eight, before a proper measure could be obtained. The ther-

mometer varied from 55° to 70° during the several days of the experiment.

Strength of Arm.—It has been found in practice that if the pull is taken against a fixture of any kind, it is impossible to prevent the men from throwing the weight of their body into the scale, by which means the experiment is vitiated.

A return is annexed, marked A, showing the result of an experiment with 20 men, to ascertain the difference in lbs. of the pull when the resistance is given by the extended arm only, as in Fig. 1, and when pulling against a spring attached to a wall or other fixture, as in Fig. 2. The result shows that in the latter case the number of lbs. obtained by each man is as nearly as possible double, showing the great importance of attention to this particular. The instruction ought, therefore, to preclude the possibility of using a fixed point of resistance of any kind. Fig. 1 shows the position in which all the trials for this measurement were taken. The extended arm should be stretched out straight from the side and as nearly as possible in the line of the shoulders, otherwise if extended towards the front, at an angle with the line of the shoulders, it gives way to the pull of the other arm, and the number of lbs. pulled is reduced. The spring balance should invariably be used, the balance when in use touching the inner side of the arm. The length of the

Fig. 1.—Showing the position in which the test of Arm Strength should be taken.

balance from handle to handle should be about 1 foot 8 inches; if this length is increased the purchase is diminished. The extended arm should on no account be allowed to touch any wall or other fixture, as it has been found that even by resting the extended hand against a table, the number of lbs. can be considerably increased. Attention is drawn to the return showing the performances of 18 officers of the regiment, by which it will be seen that the average pull of the officers exceeded

FIG. 2.—SHOWING THE POSITION IN WHICH THE TEST OF ARM STRENGTH SHOULD *not* BE TAKEN.

that of the men in the proportion of 100 to 77. Their breathing capacity also considerably exceeded that of the men, being in the proportion of 275 to 231.*

* The Return of Officers is not given, the result being all that is necessary to be recorded.

A.

Name and surname.	Strength of arm, drawing power in pounds in position. Fig. 1.	Strength of arm in position. Fig. 2.
W. Langford	84	190
W. Howe	70	130
E. Clarke	75	164
B. Cripps	66	190
W. Etherington	68	160
J. Wiltshire	94	195
G. Martin	82	200
G. Taylor	90	158
H. Butcher	87	160
A. Hanks	100	162
W. Mills	64	115
W. Moth	78	200
W. May	62	164
G. Mills	72	128
I. Turner	92	150
J. Waler	82	195
H. Smith	90	200
G. Hedger	90	140
J. Fuller	103	190
J. Pullen	90	160
Average	81·95	167·55

This return shows the number of lbs. pulled by each man in the position shown in Fig. 1 when the resistance is given by the extended arm only, and in the position shown in Fig. 2 where the balance is fixed against a wall.

Sight.—This measurement required great care. When the dots on the card are employed as a rejecting test only, as in the case of Army recruits, it is only necessary to test the sight at a single distance, but when, as in this case, the object is to ascertain how far the dots can be seen, it is necessary to test the powers of vision at several distances, moving the men backwards, until a point beyond their power of vision is reached, and then advancing them again until the exact limits of visual capacity are determined. This requires considerable time, and anything which is calculated to increase the time taken in the experiment also increases the probability of inaccuracy and error. It was found that the use of the small test dots $\frac{1}{20}$ inch square has this effect. Although in theory the result is the same as when the larger dots of $\frac{1}{5}$ inch square used for the army are employed, in practice it was found that the smaller dots require more careful adjustment to the several distances. The effect of the slightest dirt, or of light and shade upon the card, is greater with the

small than with the larger dots. Greater precision is required in uncovering any specified number of dots, and this is a constant source of delay and error, even the shadow formed by the margin of the covering card impedes the clearness with which the dots can be seen, and the effect when a large number of soldiers or working men have to be examined in a given time is simply the same as if a delicate instrument were placed in clumsy hands. On this account I recommend that the test dots of $\frac{1}{8}$ inch used for the army should be employed in preference to the smaller ones.

The very large excess of country folk over town folk in the regiment precludes the possibility of comparison as to the effect of these different modes of life; and the tables and diagrams here given can only be of use as a prelude to further investigation. Although the returns of a few cases convey a fair idea upon some of the more salient peculiarities, such as the colour of the hair and eyes, I am convinced that no true estimate can be formed of the general physique of the population of a district without measuring a very much larger number of men and women. Whatever may be the amount of care taken in the choice of examples, the collector of the statistics must necessarily prejudge the whole question, in order to make what he conceives to be an impartial selection, and where this inevitable source of error lies at the very root of the inquiry, the accuracy that is bestowed upon the details of measurement is to a great extent thrown away. In the present instance the returns being those of an entire regiment at least precludes the possibility of any error arising from my individual choice.

In conclusion I have only to add that the weights and spring balances employed in the investigation were carefully tested before use. Silvester's patent spring balance being the one employed for testing the strength of arm. The whole of the measurements have been made and the returns drawn up under my superintendence by Staff-sergeant Riordan, the non-commissioned officer usually employed at this brigade depôt in measuring recruits. To the care and accuracy which he has bestowed on this voluntary labour, as well as to the assistance afforded by Sergeant Light, 2nd Surrey Militia, and Private Nimmo, of the 2nd Queen's Regiment, the results of the investigation are in a great measure due. The whole of the officers and men of the 2nd Surrey Militia also rendered me their best assistance in making the returns as accurate as possible.

The following are tables giving the percentage of the several measurements, from which curves can be drawn, if required. When reduced to curves, these tables shew very clearly the relative amount of accuracy that is obtainable in the measure-

ments: thus the curves resulting from the tables of age, height, weight, and chest measurement are exceedingly even; whilst those shewing the strength of arm, breathing capacity, and sight which depend upon an effort either on the part of the subject or the observer, show less even curves. It is to be regretted that these curves cannot be shewn, as the relative flatness of the different parts of the curve afford more information than can be conveyed in several pages of printing.

TABLE No. 1 SHOWING THE AGES OF 459 MEN 2ND ROYAL SURREY MILITIA.

Ages.	Number of each age as observed	Number of each age reduced to per cents.
14 years.	*1	1·08
16 and under 17.	4	2·83
17 " 18.	13	7·62
18 " 19.	35	7·62
19 " 20.	35	7·4
20 " 21.	34	9·36
21 " 22.	43	8·27
22 " 23.	38	6·75
23 " 24.	31	4·79
24 " 25.	22	5·66
25 " 26.	26	5·22
26 " 27.	24	3·26
27 " 28.	15	3·48
28 " 29.	16	2·61
29 " 30.	12	3·48
30 " 31.	16	1·96
31 " 32.	9	1·96
32 " 33.	9	1·08
33 " 34.	5	1·96
34 " 35.	9	1·96
35 " 36.	6	1·3
36 " 37.	9	1·96
37 " 38.	6	1·3
38 " 39.	6	1·3
39 " 40.	3	1·74
40 " 41.	2	
41 " 42.	3	
42 " 43.	5	1·08
43 " 44.	3	1·08
44 " 45.	2	
45 " 48.	4	·87
48 " 49.	6	1·3
49 " 50.	2	·87
50 " 52.	1	
52 " 53.	1	
53 " 55.	1	·65
55 " 59.	1	
59	1	
Totals.	459	100

Average age 26 years.
* Drummer boy.

TABLE No. 2 SHOWING HEIGHTS—2ND ROYAL SURREY MILITIA.

Heights.	55 inches.	62 and under 63.	63	64.	64	65.	65	66.	66	67.	67	68.	68	69.	69	70.	70	71.	71	72.	72	73.	73.	Totals.
Number of each height as observed	*1	35	73		91		70		59		53		34		23		15		2		2		1	459
Number of each height reduced to per cents. ..	7·84		15·9		19·82		15·46		12·85		11·54		7·4		5·		3·26		1·08					100

* Drummer boy.
Average height, 65·62 inches.

TABLE No. 3 SHOWING CHEST MEASUREMENTS — 2ND ROYAL SURREY MILITIA.

Chest measurements.	28 inches.	29 and under 30.	30	31.	31	32.	32	33.	33	34.	34	35.	35	36.	36	37.	37	38.	38	39.	39	40.	40	41.	41	42.	42	Totals.
Number of each size as observed	2	4	8		18		48		81		113		68		59		34		10		5		6		2		1	459
Number of each size reduced to per cents. ..	1·3		1·74		3·92		10·45		17·64		24·61		14·81		12·85		7·4		2·17		1·08		1·3		·65			100

Average 34·48 inches.

TABLE No. 4 SHOWING BREATHING CAPACITY—2ND ROYAL SURREY MILITIA, as shewn by Coxeter's Spirometer.

Breathing capacity.	120 cubic inches.	150 and under 160.	160 to 175.	176 „ 180.	181 „ 190.	191 „ 200.	201 „ 210.	211 „ 220.	221 „ 230.	231 „ 240.	241 „ 250.	251 „ 260.	261 „ 270.	271 „ 280.	281 „ 290.	291 „ 300.	Totals.
Number of men of each capacity as observed .	2	6	8	11	14	40	58	54	55	62	43	25	16	27	22	15	458
Number of men of each capacity reduced to per cents.	·04	1·31	1·74	2·4	3·05	8·73	12·66	11·79	12·	13·53	9·38	5·45	3·49	5·89	4·8	3·27	100

Average 232·45 inches.

TABLE No. 5 SHOWING WEIGHTS—2ND ROYAL SURREY MILITIA.

Weights.	74 lbs.	90 to 99.	100 „ 109.	110 „ 119.	120 „ 129.	130 „ 139.	140 „ 149.	150 „ 159.	160 „ 169.	170 „ 179.	180 „ 189.	190 „ 199.	200	Totals.
Number of each weight as observed	*1	1	9	32	100	127	107	46	23	7	3	2	1	459
Number of each weight reduced to per cents. ..	2·39			6·97	21·78	27·66	23·31	10·02	5·01	1·52	1·3			100

* Drummer boy.
Average 137·22 lbs.

TABLE No. 6 SHOWING STRENGTH OF ARM—2ND ROYAL SURREY MILITIA.

Strength of arm.	35 lbs.	40.	48.	50 to 55.	56 „ 60.	61 „ 65.	66 „ 70.	71 „ 75.	76 „ 80.	81 „ 85.	86 „ 90.	91 „ 95.	96 „ 100.	101 „ 105.	106 „ 110.	114.	120.	136.	Totals.
Number of each strength as observed	1	1	1	21	33	26	76	51	75	51	57	29	23	6	4	1	2	2	459
Number of each strength reduced to per cents.	·65			4·57	7·18	5·66	16·56	11·11	16·34	11·11	12·41	6·31	5·	1·3	1·96				100

Average 77·39 lbs.

TABLE No. 7 OF SIGHT—2ND ROYAL SURREY MILITIA.

Distances.	9 feet.	10 and under 15.	15 „ 20.	20 „ 25.	25 „ 30.	30 „ 35.	35 „ 40.	40 „ 45.	45 „ 50.	50 „ 55.	55 „ 60.	60 „ 65.	65 „ 70.	70 „ 75.	75 „ 80.	80 „ 85.	85 „ 90.	90 „ 95.	95.	Totals.
Number of men at each distance as observed	1	1	1	4	..	6	5	6	25	54	59	72	103	64	32	16	4	2	2	457
Number of men at each distance reduced to per cents.	·65			·87	..	1·31	1·09	1·31	5·47	11·81	12·91	15·75	22·53	14·	7·	3·5	·87	·87		100

Size of test dots used ■. Average 64·19 feet.

DISCUSSION.

Mr. LAWSON said: With reference to the test dots employed in the army, they are required to determine the minimum range of vision deemed requisite for a soldier. These dots are one-fifth of an inch in diameter, and at 10 or 15 feet distance from the eye, subtend an angle the same as a centre of two feet on a target at 600 or 900 yards distance, respectively. The ordinary range of vision in a young person, however, far exceeds this, and the dots can be perceived distinctly two or three times farther off, or even more; and were dots of one-fifth inch adopted, there would be much inconvenience experienced, especially in towns, in finding suitable

places for testing the range of vision by their means. To meet this difficulty, the Anthropometric Committee thought it advisable to recommend a dot of one-twentieth of an inch in diameter only, which, being but one-fourth as wide as the other, would subtend the same angle at one-fourth the distance, and so be far more applicable under the circumstances in which numerous persons who might feel inclined to assist in this inquiry are placed.

Col. LANE FOX said, in reply, that the matter referred to by Dr. Lawson respecting the size of the test dots was a purely practical one; the small dots had been used by him at first, but he abandoned them for the reasons stated: 90 or 95—say 100—feet was the utmost distance that could be required for the use of the larger dots, and this could generally be obtained out of doors. It did not appear to him desirable that the test should be taken indoors, as the distance depended upon the light, and the return would resolve itself into one shewing the amount of light admitted into people's houses. He felt convinced that the greatest difficulty to be overcome in obtaining useful returns consisted in securing uniformity of test, without very strict attention to which the results would be misleading.

Mr. Sweet then read the following paper:

LANGUAGE *and* THOUGHT.

THIS paper is mainly based on one read by me before the Philological Society of London in the summer of 1876, under the title of "Words, Logic, and Grammar." It was suggested to me by a distinguished member of the Anthropological Institute, Mr. E. B. Tylor, that the questions raised by me might prove interesting to anthropologists as well as philologists, and I gladly acceded to the request of that body to read a paper on these subjects, with especial reference to anthropology. I have, accordingly, endeavoured to divest my original paper of all unnecessary technicalities, and by fuller treatment of what might otherwise be obscure to those who are not conversant with the details of philology, to make my exposition as clear as possible.

I regret very much that my original paper was written in complete ignorance of the works of Steinthal. Just before sending my copy to press, I accidentally came on his "Logik, Grammatik, and Psychologie," and was glad to find my views of the relations of grammar to logic fully confirmed. I have with great difficulty secured a copy of this work within the last few days, and regret extremely that my prejudices against German linguistic mysticism (which, in many cases, I must claim to be well founded), prevented me from studying it before.

I can only hope that my observations, imperfect as they are, may be found to be not entirely devoid of originality, and that they may, perhaps, be the means of inducing some of the members of the Anthropological Institute to investigate for themselves questions which belong almost as much to anthropology as to linguistic science.

Introduction.—One of the most striking features of the history of linguistic science as compared with zoology, botany, and the other so-called natural sciences, is its one-sidedly historical character. Philologists have hitherto chiefly confined their attention to the most ancient dead languages, valuing modern languages only in so far as they retain remnants of older linguistic formations—much as if zoology were to identify itself with palæontology, and refuse to trouble itself with the investigation of living species, except when it promised to throw light on the structure of extinct ones.

Philologists forget, however, that the history of language is not one of decay only, but also of reconstruction and regeneration. These processes are of equal, often more importance than those by which the older languages were formed, and, besides, often throw light on them. They have further the great advantage of being perfectly accessible to the observer. Thus the growth of a language like English can be observed in a series of literary documents extending from the ninth century to the present day, affording examples of almost every linguistic formation.

But before history must come a knowledge of what now exists. We must learn to observe things as they are without regard to their origin, just as a zoologist must learn to describe accurately a horse, or any other animal. Nor would the mere statement that the modern horse is a descendant of a three-toed marsh quadruped be accepted as an exhaustive description. Still less would the zoologist be allowed to ignore the existing varieties of the *Equidæ* as being "inorganic" modifications of the original type. Such, however, is the course pursued by most antiquarian philologists. When a modern language discards the cumbrous and ambiguous inflexions it has received from an earlier period, and substitutes regular and precise inflections and agglutinations of its own, these formations are contemptuously dismissed as "inorganic" by the philologist, who forgets that change, decay and reconstruction are the very life of language—language is "inorganic" only when it stands still in its development.

The first requisite is a knowledge of phonetics, or the form of language. We must learn to regard language solely as consisting of groups of sounds, independently of the written

symbols, which are always associated with all kinds of disturbing associations, chiefly historical. We must then consider language in its relation to thought, which necessitates some study of the relation of language to logic and psychology. Such investigations, if carried out consistently, will greatly modify our views, not only of English, but of language generally, and will bring us face to face with many of the ultimate problems of language, which have hitherto been rather shirked by philologists. Such problems are those which I propose to discuss in the present paper. I begin with the important question of sentence-, word- and syllable-division, beginning again with the purely formal, or phonetic criteria.

Sentence- and word-division.—The first and most obvious is the organic necessity of taking breath—we are unable to utter more than a certain number of sounds in succession without renewing the stock of air in our lungs, which unavoidably necessitates a pause. Speech in its simplest form consists mainly of short questions and answers expressed in simply constructed phrases—in this case there is not merely a pause, but an absolute cessation of voice.

Within these "breath-groups," or phonetic sentences, there is no pause whatever. This is important to observe, as many people, misled by our ordinary word-division, imagine that they make a pause at the end of every word. But a very little observation will be enough to convince them that the words of a sentence run into one another exactly in the same way as the syllables of a word do. This coalescence is most readily observable in the stopped consonants, which, when sounded alone, or at the end of a sentence, end in a marked explosion of breath, which is sometimes called the "organic recoil." Now if we compare such a sentence as "he took off his ha*t*" and "he took his ha*t* off," we see that this organic recoil is quite wanting in the second sentence, the *t* in "hat off" being pronounced exactly as in the single word "hatter."

The second criterion is force or stress—the most important element in the synthesis of speech-sounds. If we take a simple sentence, such as the imperative "come to-morrow," and regard it provisionally as one undivided sound-group, all that we can hear is that certain syllables are uttered with more force than others: indicating force by italics, we have, therefore, "*co*me-to-*mor*row." We find, in short, that every sentence can be analyzed into smaller groups characterized by one predominant stress-syllable, round which the others group themselves. In our sentence there are two such stress-groups; and if we consider the meaning of the sentence, we see that the number of stress groups agrees exactly with that of the words it contains

—a word is, phonetically speaking, a stress-group. It must now be observed that the stress, although it tells us how many words there are in a sentence, does not tell us where the words begin. Thus in the above sentence there is nothing in the *sound* to enable us to assign the second syllable to the first or the second stress-group—there is, phonetically speaking, no more reason for the division "*c*ome to*m*orrow" than for "*c*ometo *m*orrow," although the *sense* shows clearly that the first is the only possible one. Word-division is really a very complex problem, involving many considerations, phonetic, logical and grammatical. We get so accustomed to our received word-division that we regard it as something self-evident. But when we have to deal with unwritten languages, we find it by no means so easy. Thus in Mr. Jenner's paper on the Cornish Language ("Trans. of the Phil. Soc., 1873–4") it is stated that at the beginning of the last century Cornish was "a most irregular jargon, the chief peculiarity of which was a striking uncertainty of the speakers as to where one word left off and another began." I must confess to having encountered the same difficulty in my study of our own language.

It is evident that word-division implies *comparison*. As long as we confine ourselves to the examination of isolated sentences, we shall not advance one step further. But when we compare a variety of sentences in which the same sound-groups are repeated in different combinations, we are able first to distinguish between meaning and unmeaning sound-groups, and finally to eliminate a certain number of groups having an independent meaning and incapable of further division. The test of independent meaning is *isolation*, or the power of forming an independent sentence. We may, therefore, define a word as an ultimate, or indecomposible sentence. Thus the verb "come" pronounced with a falling tone is equivalent to the fuller sentence, "I order you to come;" the adverb "up" pronounced with a rising tone may signify "shall we go up?" or may have some analogous meaning determined by the context. The same applies also to nouns, pronouns and adjectives. Sound-groups, which, although phonetically capable of isolation, are meaningless when so isolated, are not words.

But between these two extremes there is an intermediate class of sound-groups, which, although not capable of being isolated and forming sentences by themselves, are yet not utterly devoid of meaning, and can, therefore, be to a certain extent isolated in thought, if not in form. Thus, if we compare the three groups "man" "*a*man," and "the*m*an," we see that the two prefixes have an unmistakable, though somewhat vague meaning of their own, which enables us to identify them at

once in all other cases in which they are prefixed to nouns, and yet these two syllables would convey no meaning if pronounced alone. If, on the other hand, we attempt to analyse such a group as "deviate," we find that not only are its elements incapable of logical isolation, but that they fail to suggest any idea whatever. The last syllable is, of course, identical with the preterite of the verb "eat," but the association is felt to be purely fortuitous. But if we compare "deny," "depose," and "deprive," we feel at once the meaning of deprivation and negation in the *de*, just as we feel the generalising and specialising meaning of the prefixes in "*a*man," and "the*m*an," although the syllables "ny," "pose," and "prive," have no meaning whatever by themselves. We are, therefore, obliged to regard "deny" &c., as ultimate, indecomposible words, in spite of the significance of the prefix, while in the case of "theman" and "aman" it is, to some extent, an open question whether we have here one word or two words. It seems best to distinguish two classes of words, *full-words* and *half-words*, "man" being a full-word, "the" a half-word—that is, a word incapable of forming a sentence by itself, or of suggesting an independent meaning.

The next question is, how far do these logical distinctions correspond to the phonetic ones already laid down? The answer is simple enough. Full-words correspond to stress-groups, half-words to stressless syllables. If we wish to know how many full-words there are in a sentence, we only have to count the number of full stresses. Each full stress indicates a full-word, although it does not show where the word begins and ends.

It is evident, therefore, that the formal criteria of word-division may vary according to the laws of stress in each language. In Icelandic, for instance, where every word which has a stress at all (that is, every full-word), takes it on the first syllable, the stress not only indicates the full-words, but it also shows where they begin. In French, again, the stress is so slightly marked and so vague as to be no guide whatever even in distinguishing between full- and half-words. In "arc-en-ciel," for instance, there often is a strong stress on the "en," the most unimportant member of the combination.

It must be remarked that the test of being able to form a sentence by itself does not strictly apply to all words. The finite verb is an important exception. The third person, "goes," for instance, cannot form a sentence by itself; by the sentence-test, therefore, "goes" is not a word; while "hegoes" is. And yet it would be absurd to deny the title of word to "goes" in such a sentence as "the*m*an*g*oes." We feel "goes" to be a

full-word, 1, because it has the full stress; 2, because of the analogy of the imperative "go," which can stand alone; and 3, because of "hegoes," which is felt to be a compound precisely analogous to "theman," &c.

There is, finally, an important phonetic element of word-division to be noticed. This is the fact that certain sounds and sound-combinations only occur in certain positions. Thus the sound *ng*, and the combinations *tl*, *x*, &c., never occur at the beginning of a sentence, and others, again, never occur finally. It is, therefore, clear that these sounds cannot begin or end any full-word.

Derivative syllables and inflections.—We must now consider the important question of the relation of half-words to derivative syllables and inflections. It need scarcely be remarked that no absolutely definite line can be drawn between them, and that the distinctions made in practice are often purely conventional.

We must first consider an important distinction between full- and half-words, which clearly brings out the semi-inflexional character of the latter, viz., that full-words are position-free, half-words not. Compare the varying position of "go" in such sentences as "*go*away," "I'll*go*," "I'll*go*away," with the unvarying præ-position of "the" in "the*m*an." The same fixity of position characterises derivatives and inflexions also, but in a higher degree. Thus, although the position of "the" *before* its noun is fixed, the connection is loose enough to allow an adjective to come between, as in "the*g*ood*m*an." Such "incorporations" are quite exceptional with derivative syllables, and still more so with inflexions. It is interesting to distinguish between "a*g*ood*m*an" and such collocations as "*m*anya*m*an," where the adjective is simply prefixed to the noun and its prefix instead of being incorporated. In "a*h*undred*m*en," also, there is no incorporation, "a*h*undred" being a prefixed substantive used as an attribute-word.

Derivations may be either initial or final, inflexions are only final. This last is, of course, an arbitrary limitation, which although convenient enough in treating of the old Aryan languages, in which the most general relations were generally expressed by suffixed syllables, does not apply to other languages, which indicate the same relations by means of prefixes. Even in the Aryan languages such formations as the augment and reduplication can only be conventionally separated from the postfixed inflexions. It is, however, undeniable that, in the Aryan languages at least, the end of words is more exposed to phonetic decay than the beginning, and consequently that that intimate fusing together of root and modifying syllable, which

is felt to be something more advanced than mere derivation, and which we call inflexion, has a right to be considered rather as a "final" than as an "initial" phenomenon.

There are several important distinctions between half-words and derivatives. Half-words can be used everywhere where their meaning allows of it, thus "the" can be prefixed to all nouns. Such a derivative as "be," on the other hand, can only be prefixed to certain words without any apparent reason—we have "become," but not "bego." Further, the root often has no independent existence; from "behave" (pronounced "behaiv"), for instance, we cannot deduce a verb "have" (haiv). Or else the connexion between the meaning of the simple root and that of the derivative is not evident, as in "come," and "become." There are, of course, various degrees of obscuration of meaning; the prefix "be," for instance, is practically almost meaningless in the present English, while "mis" in "mistake," "misfortune," &c., has a perfectly clear meaning. But as a general rule the connexion between derivative syllable and root is logically very intimate, more so even than in inflexions. Sometimes the derivative syllable even takes the full-stress from the root, as in the German *ant-wort*, which never happens with half-words and inflexions.

Inflexions differ from derivative syllables, and agree with half-words in being of general, unrestricted application, and in always preserving a more or less definite general signification. Their main characteristic is phonetic variation and obscuration; derivative syllables are invariable in form, inflexions not. Compare the plural forms "hats," "dogs," "men," "feet," so definite in meaning, and so divergent in form, with a group of "be" derivatives, with their constancy of form and want of meaning. Inflexions often express the same idea in totally different ways, either from phonetic change, as in the Latin acc. plurals *ovēs*, *equōs*, and the Greek acc. singulars *híppon*, *ópa*, or from confusing the meanings of forms of independent origin, as in the Latin datives *populō* and *patrī*.

If we assume, as we seem to be justified in doing by historical evidence, that derivative syllables and inflexions have developed out of half-words, we may roughly describe a derivative syllable as a half-word which has lost its logical, an inflexional as one which has lost its phonetic independence.

Syllable-division.—We may now turn to the important question of syllabification. The definition of a syllable is easy enough: it is a group of sounds containing a vowel, or, in some cases, a vowel-like consonant. To determine the number of syllables in a word, we have simply to count the number of

vowels. The difficulty is to tell where the syllable begins. Here I am compelled to differ both from Mr. Bell and Mr. Ellis. Mr. Bell considers that the division into syllables is determined by the nature of the sounds which constitute the syllable, whereas I hold that syllabification has nothing to do with the sounds themselves, but depends entirely on the force with which we pronounce them. (It must be understood that I speak of the natural syllabification of spoken language, not of the artificial syllabification of the spelling-books.) Let us consider the syllabification of a natural, simple sentence, such as "*t*akeup*the*acup." Here we at once feel that the first *k* belongs to the preceding syllable, that the syllabification is clearly "take-up" (taik-up), while the second *k* belongs to the following syllable, the division being "tea-cup" (= tee-kup), the consonant being the same in both cases. The difference is simply one of stress, the first *k* being pronounced with weak, the second with strong force. (We may for the present disregard the fact that the stress is in both cases secondary.) The influence of the syllable-stress in determining the meaning of words is so important that if we reverse that of "takeup" by beginning the secondary stress not on the vowel, but on the preceding *k*, the word becomes quite unintelligible, or rather, sounds like an Irish pronunciation of "teacup." Other examples of varying syllabification are "nota*t*all,"* and "a*t*all*m*an," "a*t*ack," = "attack" and "a*t*ack," = "at Ack" (name of place). We see, in short, that a syllable is a vowel-group beginning with a certain degree of force, which decreases up to the end of the syllable, till a new stress marks the beginning of another syllable. This decrease of force is observable in monosyllables also: in "cat," for instance, the *k* is much stronger than the *t*—we do not pronounce "k*at*" or even "*kat*," but only "*k*at." Indeed, it may be stated as a general law that perfect uniformity of force is something exceptional: force is followed by weakness of stress, and uniform weakness, again, cannot be sustained, but requires force to relieve it. These principles are clearly shown in the accentuation of polysyllabic words. If we carefully measure the degrees of force with which the different syllables of a word like "impenetra*b*ility" are pronounced, we shall find that every syllable has a different degree of force. Simple sentences, which are phonetically identical with polysyllabic words (or even in some cases with monosyllable ones), follow the same laws. They always have one predominant stress which dominates over the simple word-stress. The great distinction between words and sentences is that in the former the predominant stress is fixed

* Generally, however, pronounced "nota*t*all," just as "at*h*ome" becomes "a*t*ome."

and invariable, while in the latter it varies according to the principle of emphasis, which gives the strongest stress to the most important word.

Word-division in writing.—We may now turn to the practical question of word-division in writing. If we are to be guided consistently by logic, we must either write all half-words, derivative syllables and inflexions as separate words, or else incorporate them into the full-words. The difficulty is that, although word-division is mainly logical, the purely formal side of the question must also be considered. Thus, although it would be as easy to write the plural of "fish" in two words "fish is," as it would be if the "is" were the verb substantive, it would be impossible with the plural of "foot," unless indeed we were boldly to write "ft ee," although even this spelling would ignore the fact that the *ee* is as much part of the word itself as a sign of the plural. Cases in which unpronounceable letter-combinations would have to be written separately have also to be considered. The isolating system is thus found to be impracticable, if carried out consistently, and nothing remains but that of joining the half-words on to the full-words. This method, while offering considerable difficulties of detail, is practicable, although it has not been carried out consistently in any language I know. Our present word-division is a compromise between the two extremes of isolation and agglutination. As a general rule we agglutinate inflexions and derivatives, and isolate half-words, whose connexion with the whole-word to which they belong is less intimate than in the case of inflexions and derivatives. Inflexions are only acknowledged when sanctioned by Latin Grammar. Such purely modern inflexions as the negative "Icant" from "Ican," where the *nt* = "not," although conventionally only a half-word, not a true inflexion, could not be written as an isolated word, are shirked by that convenient compromise the apostrophe (’): by writing "can't," we keep up the fiction of the divisibility of a monosyllable into two separate words.

All these considerations show the hopeless confusion into which orthography falls when it attempts to overstep its legitimate function—that of giving a faithful graphic representation of the sounds of the spoken language. The attempt to indicate simultaneously the formal and the logical side of language by the same alphabet—an alphabet, it may be remarked, which is barely capable of fulfilling its purely phonetic duties alone—is about as successful as most compromises, that is, instead of doing one thing properly, it does two things badly. If, for instance, it is convenient to denote a substantive by a capital letter in German, why should we not do so in English, and why

should not the same principle be extended to the other parts of speech? Adjectives, for instance, might be written with a turned capital, verbs with an italic, adverbs with a turned italic. Again, in Latin it would be very convenient to have a series of marks to indicate the different cases, independently of their form, and would much facilitate the understanding of Latin. Others, again, think that the spelling of every word ought to give a brief epitome of its etymology and history. If carried out consistently, all this would postulate an entirely independent set of signs, which, for special purposes, would be written between the lines of ordinary phonetic writing, forming a sort of short-hand logical, grammatical or historical commentary, as the case might be. In the same way I should consider word-division simply as a logical commentary on the phonetic text; in short, I would abolish the ordinary word-division altogether.

But the abandonment of conventional word-division by no means postulates a return to the old system of writing each sentence without a break. On the contrary, it is clear that the great assistance afforded to the reader by presenting the letters in groups of moderate length was the one great reason for abandoning the original system of non-division. As we have seen, the most important element in the synthesis of speech-sounds is stress. I propose, therefore, to follow the analogy of musical notation, and divide our sentences into bars, making the beginning of each group of letters coincide with a full-stress. The accent-mark otherwise required to mark the full-stress would be available for the secondary stress, and the same mark, when placed before a letter-group or "stress-group," as we may call it, would indicate the emphatic sentence-stress. Thus with a single mark we should be able to indicate no less than four degrees of stress. We should, however, also require a mark to indicate absence of stress at the beginning of a sentence. If we added a sign for breath-taking, and two accents to indicate the rising and falling tones, we should be able to dispense entirely with the present unsatisfactory system of punctuation, &c., and to express clearly and precisely what they indicate only imperfectly and vaguely.*

Logic and language.—The great difficulty of all investigations which involve a study of the meanings of language is the want of a satisfactory classification of what is expressed in language. We have not even a classification of the words themselves, except Roget's "Thesaurus of English Words and Phrases," which, although a wonderfully acute and full work, is now somewhat antiquated, written as it was before the rise of modern psychology, under all the disadvantages of being a first attempt.

* Examples of this stress-division will be given hereafter.

I have been engaged for some years in trying to devise a more consistent and satisfactory scheme of classification; but as it is still unsettled in many of its details, I will not enter into any details now, but content myself with a few general remarks.

In the first place it must be borne in mind that the ultimate ideas of language are by no means identical with that of psychology, still less with those of metaphysics. Language is not in any way concerned with such psychological problems as the origin of our ideas of space and matter; for at the time when language was evolved, these conceptions were already stereotyped in the form of simple ideas, incapable of any but a deliberate scientific analysis. Even such universally known facts as the primary data of astronomy have had little or no influence on language, and even the scientific astronomer no more hesitates to talk of the "rising of the sun" than did the astrologers of ancient Chaldæa. Language, in short, is based not on things as we know or think them to be, but as they *seem* to us.

But although the categories of language do not require so deep an analysis as those of psychology, they are on the other hand far more complicated. Each word we use suggests a large number of ideas at once, varying always according to the context, and it is a matter of extreme difficulty to select the really characteristic and essential idea or ideas, which can alone be made the basis of classification. It is the great defect of Roget's system that he often classes his words by some extraneous idea which they suggest. Thus "food" is considered as something purely mechanical, as a mode of "insertion," and hence is included under "directive motion," whereas it clearly comes under "volitional functions of living beings" with, of course, a cross-reference to "insertion" and its other mechanical associations. "Theft" again is naïvely classed as a mode of "transfer of property," whereas it belongs first to "ethics" or "morality," and only subordinately to "property," ethics being a far wider category than property, although both ideas are equally indispensable to the meaning of the word. It is much as if we were to class frogs and horses together as "quadrupeds," and then make a special class "mammalia" to distinguish horses. For many words special compound categories are required. It is, for instance, quite misleading to class "sharp," "edge" and "knife" together under "superficial form," as Roget does; the essential difference between "knife" and the other two is that while they denote (or can denote) natural objects, "knife" always implies human agency: we require therefore a special category "inanimate things + volition," or something of the sort. Similarly "meadow," as opposed to "heath," etc., requires a special complex category.

It is further very important to begin with a limited selection of words in popular use. Roget's Thesaurus is full of such words as "zoohygiantics," "cicuration," &c., which only tend to confuse the mind, and increase the difficulty of arrangement. In my own lists I have cut out at least three-fourths of the words given in ordinary dictionaries.

Indeed, there can be no question that a vocabulary of, say, 3,000 representative words would be amply sufficient to begin with. If these words were properly classified, the rest of the words of the language would offer no difficulty: their arrangement would be merely a matter of detail.

Such a vocabulary would also form a most valuable foundation for the practical study of language. The study of 3,000 of the commonest words in any modern language by means of idiomatic sentences taken from actual life (not made up artificially, as is done in most elementary books), the whole being arranged according to the meanings, would enable any one to express himself on most of the ordinary topics of life with far greater accuracy than is now attainable, even after years of floundering about in the pages of unwieldy and unpractical dictionaries and grammars.

For anthropologists and students of psychology such a vocabulary would be of the highest utility. For the investigator of savage life a much smaller one would suffice to give a full and comprehensive picture of the moral, social, and intellectual state of those who speak the language.

I will now discuss the parts of speech, confining myself for the present to the consideration of noun, adjective, and verb. I may remark at once that the real difficulty of determining the meaning of the parts of speech lies in the fact, which logicians and grammarians obstinately ignore, that they often have no meaning at all. Indeed the whole of language is an incessant struggle and compromise between meaning and pure form, through all the stages of vagueness, ambiguity and utter meaninglessness.

If we confine our attention to material objects and to the simplest nouns, adjectives, and verbs, we see at once that the original function of these classes of words was to denote things and their attributes; adjectives denoting their permanent attributes or qualities; verbs their changing attributes or phenomena. It must be borne in mind that primitive man did not distinguish between phenomena and volitions, but included everything under the head of actions, not only the involuntary actions of human beings, such as breathing, but also the movements of inanimate things, the rising and setting of the sun, the wind, the flowing of water, and even such purely inanimate phenomena as fire, elec-

tricity, &c., in short, all the changing attributes of things were conceived as voluntary actions. Hence the origin of verbs from the simple root with a personal pronoun following. Further, in speaking of things it would be natural to call attention in the first place to their changing rather than to their permanent attributes, which would generally be taken for granted. Primitive man would not trouble himself with such propositions as "man is mortal," "gold is heavy," which are a source of such unfailing delight to the formal logician; but if he found it necessary to employ permanent attribute-words, would naturally throw them into what is called the attributive form, placing them in immediate proximity with the noun, whose inflexions they would afterwards assume. And so the verb gradually came to assume the purely formal function of predication. The use of verbs denoting action necessitated the formation of verbs to denote "rest," "continuance in a state," and when, in course of time, it became necessary in certain cases to predicate permanent as well as changing attributes, these words were naturally employed for the purpose, and such a sentence as "the sun continues bright" was simply "the bright sun" in another form. By degrees these verbs became so worn away in meaning, gradually coming to signify simple existence, that at last they lost all vestiges of meaning whatever, and came simply to be marks of predication. Such is the history of the verb "to be," which in popular language has entirely lost even the sense of "existence." Again, in a still more advanced stage, it was found necessary to speak not only of things, but of their attributes. Thus, such a sentence as "whiteness is an attribute of snow" has identically the same meaning as "snow is white," and "white snow," and the change of "white" into "whiteness" is a purely formal device to enable us to place an attribute-word as the subject of a proposition. We see now that the only satisfactory definition of a part of speech must be a purely formal one: "snow," for instance," is not a noun because it stands for a thing, but because it can stand as the subject of a proposition, because it can form its plural by adding *s*, because it has a definite prefix, &c., and "whiteness" is a noun for precisely the same reasons. By using the technical terms "noun," &c., in a purely formal sense, and distinguishing words according to their meaning as thing-words, attribute-words, &c., we shall be able to escape the hopeless confusion into which grammarians fall, who appeal alternately to the meaning and the form of the parts of speech in grammatical discussions. "Snow" then is both a thing-word and a noun, "white" is a quality-word and an adjective, "whiteness" a quality-word and a noun. I may notice here that great indignation was roused some time ago by a pedantic

school-inspector, who plucked some unhappy children for calling "cannon" in "cannon-ball" a noun instead of an adjective. The fact is that he had observed that "cannon" in "cannon-ball" was not a thing-word, but an attribute-word, and imagining that thing-word and noun were convertible terms, hastened to make the children feel the weight of his brilliant discovery. He would probably be as much surprised as the children themselves to hear that not only when it comes before "wall" is "stone" a quality-word, but also when it follows a transitive verb, in fact that the accusative case is what he would call an "adverb," as I hope to show hereafter.

We may now turn our attention to logic, and first of all to that introductory portion which treats of names. Although formal logic is mainly based on language, it has developed some views of its own which have had considerable influence on the grammatical analysis of language. I propose first to examine the theory of denotation and connotation. General names, such as "man," "horse," are said to denote an object and connote or imply various attributes. Proper names, such as John, London, are said only to denote an object, and not to connote any attributes. Here logicians have strangely overlooked the fact that such a word as John connotes at least two attributes, "human" and "male," "male human being." I maintain also that the name John, to those who know him, connotes an immense number of other attributes, physical, moral, and mental. That the name is practically applied at random to a variety of men is a mere accident, an imperfection of language. The word "sun," which, like John, is practically a proper name, also connotes to those who know what the sun is, a number of attributes: to people who had never seen or heard of the sun, it would connote nothing at all, less even than John, which even to those who do not know John personally, always connotes "male human being." An instructive instance of the dependence of logic on the accidents of language is afforded by the distinction it makes between such words as "white" and "whiteness." "Whiteness" is correctly described as an "abstract" name, as signifying an attribute without reference to the things that possess the attribute. "White," however, is held to be connotative: it denotes particular objects and connotes the attribute "whiteness." How a word can be said to denote an object which is entirely unknown until the name of that object is joined to it, was always a matter of bewildering astonishment to me, when I first began to study logic, and probably has been to many others as well. The truth is, of course, that "white" is as much an abstract name as "whiteness" is, the two being absolutely identical in meaning. I consider, further, that all attribute-words are denotative and

connotative, they denote an attribute and connote attributes of that attribute. Thus the word "colour" is the name of an attribute, but it also connotes all the various kinds of colour, red, blue, &c.; "bright" connotes various degrees of brightness, and so on. These secondary attributes again admit of connotation, and so on almost *ad infinitum*. The terms denotation and connotation thus appear to be applicable to every possible word, and therefore to be practically meaningless and useless. We are now able to understand what an adverb is—it is simply the attribute of an attribute, and bears exactly the same relation to an attribute, as a permanent attribute (adjective) does to a thing-word. Grammarians, misled by a false logic, describe adverbs as denoting the *manner* of an action, or make use of some similar expression, forgetting that manner is as much an attribute as anything else. Hence it follows that when an adjective is joined to a noun which is either entirely or only partially an attribute-word (action-word, for instance), the adjective is in meaning identical with an adverb; "he is a good runner," for instance, is identical in meaning with "he runs well."

We may now turn to the consideration of the proposition in logic. A regular logical proposition, such as, for instance, "all men are bipeds," is clearly nothing but a stereotyped form of the linguistic sentence. In language the subject being originally a permanent thing is stated first; when once stated its permanence is taken for granted and retained by the mind until the predicate, originally an impermanent attribute or phenomenon, is stated. That there is, however, no absolute necessity for this order is shown not only by the frequency with which it is violated in most inflexional languages, but also by the fact that the finite verb was originally formed by the agglutination of a subject-pronoun coming *after* the predicating root. And now comes the very important consideration that not only is the order of subject and predicate to a great extent conventional, but that the very idea of the distinction between subject and predicate is purely linguistic, and has no foundation in the mind itself. In the first place, there is no necessity for a subject at all: in such a sentence as "it rains" there is no subject whatever, the *it* and the terminal *s* being merely formal signs of predication. "It rains: I will therefore take my umbrella," is a perfectly legitimate train of reasoning, but it would puzzle the cleverest logician to reduce it to any of his figures. Again, the mental proposition is not formed by thinking first of the subject, then of the copula, and then of the predicate: it is formed by thinking of the two *simultaneously*. When we formulate in our minds the proposition "all men are bipeds," we have two ideas, "all men"

and "an equal number of bipeds," or, more tersely, "as many men, as many bipeds," and we think of the two ideas simultaneously, not one after the other, as we are forced to express them in speech. The simultaneity of conception is what is expressed by the copula in logic, and by the various forms of sentences in language. If these views are correct, the conversion of propositions, the figures, and with them the whole fabric of formal logic fall to the ground. It by no means follows that logic is entirely destitute of value, but we shall not arrive at the real substratum of truth until we have eliminated that part of the science which is really nothing more than an imperfect analysis of language.

Structure of English.—I now propose to say something about the structure of English, and the proper method of treating its grammar. I may state at once that I consider the conventional treatment of English to be both unscientific and unpractical, starting as it does with the assumption that English is an inflexional language like Latin or Greek. The time is still not very far distant when the grammar of all languages—however diverse their structure—was servilely modelled on that of Latin. It was assumed, for instance, that as Latin had five cases, English must necessarily have just as many and no more. In those days *man* was declined thus:—

nom.	man.	acc.	man.
gen.	man's.	voc.	oh man!
dat.	to a man.	abl.	by a man.

After a time, however, when the historical and comparative study of language had opened people's eyes a little, they began to see that on this principle the number of cases in English might be indefinitely extended—in short that there might be as many cases as there were prepositions. The cases were, accordingly, cut down to three, nominative, genitive, and accusative. As I shall show hereafter, it is very doubtful whether the so-called accusative of the pronouns has any right to be considered a case at all, and when we consider that the genitive inflexion can generally be replaced by the preposition *of*, we see to what narrow limits the English cases, or rather case, are confined. The verbal inflexions are hardly less limited. The only personal inflexion is the *s* of *he goes*, which is practically a superfluous archaism. The only other inflexions are those which form the preterite and the two participles. These, together with the plural of nouns, are the only essential inflexions of English. No wonder, then, that the historical philologist looks with contempt on English as a language "destitute of grammar." Certainly it

is so, if judged from a purely antiquarian point of view. That this point of view is inadequate to the requirements of English grammar is tacitly admitted by the grammarians, who, while refusing to allow that "of a man" is a case, do not scruple to put "I did love," &c., on a level with the inflexional preterite. And yet most of them ignore the equally important formations of the emphatic and negative forms or moods, simply because such forms are not recognised in Latin grammar.

All this confusion and inconsistency arises from the fact being ignored that the history of language is not merely one of negative decay, but also of positive reconstruction. Every language has the right to be regarded as an actual, existing organism, not merely as the representative of earlier stages. The fact that English was an inflexional language two thousand years ago does not prove that it is so now. The only rational principle is to look at the language as it is now, and ask ourselves, How does this language express the relations of its words to one another? If we examine English on this principle, we shall have no hesitation in characterising it roughly as an isolating language which is passing into the agglutinative stage, with a few traditional inflexions. Hence the value of English as a preparation for the study of language generally, when studied rationally: it enables us to watch many linguistic phenomena in the very process of formation, which in other languages can only be observed in a stereotyped condition. Another advantage of English for comparative purposes is the many-sidedness of its structure. In this respect it differs essentially from languages whose structure is primitive, not, like that of English, the result of casting off an effete inflexional system. In most agglutinative languages there is no distinction of meaning made by position, all grammatical relations being expressed by modifying syllables which have a fixed order, from which they never depart. English can, therefore, only be compared with such languages in as far as it is itself agglutinative, while in that part of its grammar which depends on position it can only be compared with "isolating" languages, such as Chinese. Again, although English agglutination is mostly of a rudimentary type, it is in other cases extremely advanced. Who, for instance, in comparing the positive future "he'll*gou*" with the negative "he*won't*gou," would be able to detect the root "will," which comes out clearly in the emphatic future, "he*will*go?" In such forms there is as much obscuration of the formative elements as in the traditional inflexions. These observations show how difficult it is to draw the lines which separate the different stages of linguistic development—languages pass from the isolating to the agglutinative and inflexional stages by insensible degrees, and

even during the fullest development of inflexion begin to lay the foundation of future agglutination.

One striking result of the English power of expressing grammatical relations by position is the freedom with which one part of speech may be converted into another. Thus "sunday" is a noun, "then" an adverb, but in "sunday evening," "— the then stateofa fairs"* they are both attribute-words. In the same way any part of speech may be made into a noun simply by prefixing an article or adjective.

Even groups of words may be treated in this way. Thus in the sentence "– the bookyou sentmewas no use," "use" is simply equivalent to the adjective "useless." When we talk of "—theem ployerslaia bilityfor injury bill," the whole of the group except "bill" is nothing but a huge composite adjective. These groups may also be inflected like simple words, as in "— the mani saw yesterdayatthe theatre's father" where on all received principles of grammar theatre's ought to be parsed as the genitive of "theatre."

English, in common with the Romance languages, is often described as an "analytical" language, as opposed to a "synthetic" language, such as Latin. This term is meant to imply that the agglutinations of modern languages are deliberate substitutions for the older inflexions—the inflexions are supposed to be "analysed" into their simple elements. It is easy to see that this view is quite erroneous. If the characteristic agglutinations of modern English, for instance, were nothing but substitutes for inflexions, there would be exactly as many agglutinations as there originally were inflexions; but, as we see, we have in English combinations to which there is nothing corresponding in the older inflexional languages, while, on the other hand, many inflexional distinctions are entirely lost.

Cases.—I propose now to examine some portions of English grammar more in detail, beginning with the cases of nouns and pronouns.

It is a curious fact, hitherto overlooked by grammarians and logicians, that the definition of the noun applies strictly only to the nominative case. The oblique cases are really attribute-words, and inflexion is practically nothing but a device for turning a noun into an adjective or adverb. This is perfectly clear as regards the genitive, and, indeed, there is historical evidence to show that the genitive in the Aryan languages was originally identical with an adjective-ending, "man's life" and "human life" being expressed in the same way. It is also clear that "noctem" in "flet noctem" is a pure adverb of time. It is not so easy to see that the accusative in such sentences as

* The (–) indicates weak stress.

"he beats the boy" is also a sort of adverb, because the connexion between verb and object is so intimate as almost to form one simple idea, as in the case of noun-composition. But it is clear that if "boy" in the compound noun "boy-beating" is an attribute-word, it can very well be so also when "beating" is thrown into the verbal form without any change of meaning.

Our difficulty in determining the meaning of the accusative has, as far as I know, never been pointed out hitherto, viz., that in many cases it has no meaning at all, but merely serves to connect a verb with a noun in various arbitrary ways. With such verbs as "beat," "carry," &c., the accusative unmistakably denotes the object of the action expressed by the verb, but with such verbs as "see," "hear," it is clearly a mere metaphor to talk of an "object." A man cannot be beaten without feeling it, but he can be seen without knowing anything about it, and in many cases there is no action or volition at all involved in seeing. And in such a sentence as "he fears the man," the relations are exactly reversed, the grammatical nominative being really the object affected, while the grammatical accusative represents the cause, but as he is conceived as a *passive* cause, the fiction of object can still be maintained. The meaninglessness of the accusative is further shown by the inconsistencies of its actual use in language. Thus Latin has "rideo aliquem," English "laugh at," while "deride" has the accusative as in Latin. Compare also English "see" with "look at" and the divergent use of the dative and accusative in Greek and Latin. It is, indeed, often doubtful *à priori* whether any language in a given case will employ the accusative or not —we can only tell by observing the actual form. Now in English, in the noun at least, the only "form" of the accusative is its position after the verb. As far as the form goes, then, "king" in "he became king," "he is king," may be in the accusative. And, as a matter of fact, English people who have not been taught grammar, that is to say Latin grammar, in their first attempts to express themselves in such a language as German, *do* put "king" in the accusative. They are naturally confirmed in this idea when they find that if they substitute for the noun a personal pronoun, which is supposed to have distinct forms for nominative and accusative, the accusative is used, and it is only the influence of ignorant grammarians that prevents such phrases as "it is me" from being adopted into the written language, and acknowledged in the grammars. In Danish "det er mig" is the *only* form known, and "det er jeg" would be as wrong as "c'est je" would be in French. Indeed, were it not for Latin grammar, we can easily imagine the grammarians proving that "king" in "he became king" could not possibly

be anything but the accusative, the action of the verb "become" passing on to the object "king." That there is really nothing extravagant in this view is shown by the Old English "hé wearð tó cyninge (gehálgod)" and the German "er ward zum könig (ernannt)."

Further we have also a positional dative, as in "he gave the man a book." May not then the supposed accusative in "he flattered the man," "it pleased the man," be really a dative, as it certainly would be historically?* This view might again be supported by an examination of the corresponding pronoun forms, for "him" is historically a dative, not an accusative, and so with the others also.†

But the truth is that, whatever the history may be, the so-called accusative of the personal pronouns is functionally not a case at all, but a special form which may be indifferently nom., acc., or dat., as the case may be. The real difference between "I" and "me" is that "I" is an inseparable prefix used to form finite verbs, while "me" is an independent or absolute pronoun, which can be used without a verb to follow. These distinctions are carried out in vulgar English as strictly as in French, where the distinction between the conjoint "je," as in "je vois," and the absolute "moi," as in "c'est moi," = "it is me," is rigidly enforced. The difference between French and English is that French has also a true conjoint accusative "me," which, as in Basque, is incorporated into the verb.‡ In vulgar English we hear not only "it is me," but also with the relative, as in "him that's here," where the polite language only tolerates "he." In the polite language we find such monstrosities as "it will give my friend and I great pleasure"—the natural result of the artificial reaction against "it is me."

And now a few words about the terminology. It will be observed that I have throughout avoided the names "possessive" and "objective." The distinctions implied are historical, and therefore the historical names should be retained. If the names of grammatical forms were to be changed whenever their meanings changed, we should have different names for every period and every language. It is much simpler to regard these terms as being what they really are, purely conventional names of forms whose meanings are often vague and sometimes nothing at all. Historically English nouns can only be said to have one case, the genitive. The unmodified base represents

* Old English, "hé ólecte ðám menn" and "hit lícode ðám menn," where "ðám men" = "homini."

† In Old English *hé* (he) has accusative *hine*, dative *him*, and *ðá* (they) has acc. *ðá*, dat. *ðám*.

‡ As in "il me voit."

historically both nominative and accusative (possibly also dative in some cases), we may therefore call it the "common" case. Pronouns have three cases, nominative, genitive, as in "it is his," and dative. The question whether "his" in "his book" is a genitive, or a possessive adjective, is really an idle one, for the genitive is in all cases functionally identical with an adjective. If we disregard history, and take position as the criterion of case, we are able to distinguish doubtfully a subject and object case, the former corresponding to the old nominative, the latter sometimes to the acc., sometimes to the dat.

Pronouns.—Pronouns bear the closest analogy to proper names. They are nouns which, in themselves, only connote "human being," and in some cases sex also. When we hear that "he is coming," all we learn is that a male human being is coming, and we learn just as much from the proposition "James is coming." The main distinction is that pronouns are of general, proper names of special application, for, if the system of giving proper names were carried out perfectly, every one would have a name to himself, which would be shared by no one else. Pronouns are, therefore, even less significant than proper names: "he" may refer in turn to each individual man there is, if the grammatical structure of the sentence allows it.

All pronouns are relative—they always refer to some noun. "He" is quite as relative in signification as "who" is, and the two are really identical in meaning, the distinction being purely formal, viz., that a sentence beginning with "who" is always accompanied by another sentence containing some statement about the person to whom the pronoun refers, and until we have this sentence, we feel that the first sentence is formally incomplete. "He" is, therefore, relative in meaning, "who" in meaning and form also. "He is here" does not really convey any more information than "the man who is here," but it can stand alone, whereas the other cannot.

Adjectives.—Adjectives may be either special or general attribute-words. Special adjectives are "bright," "blue," &c., while such adjectives as "this," "that," which connote nothing but the attribute of existing in space, are general. Still more general are such adjectives as the definite article "the," which connotes nothing but the attribute of forming a member of a class, or something similar. Many of these general adjectives are at the same time pronouns when they stand alone, thus "some" alone is equivalent to "some human beings," while in "some men" it is simply an adjective, or, as it is sometimes absurdly called, an "adjective pronoun." Similarly in vulgar English "them" by itself is a pronoun, but before a noun, as in "them things," it is a general (demonstrative) adjective.

The two articles are often so devoid of meaning as to amount practically to nothing more than prefixes for forming nouns, although this is not carried so far as in French and German, where the definite article may be said to have hardly any meaning at all, being not only prefixed, as in English, to the names of things which only occur singly, such as "the sun," "the earth," but also to proper names and the names of abstractions.

Verbs.—The really characteristic feature of the English finite verb is its inability to stand alone without a pronominal prefix. Thus "go," "run," "fly," by themselves may be either nouns or verbs; if, for instance, the indefinite article is prefixed to any of them, it becomes a noun—"a*g*o," "a*r*un," "a*f*ly," are all nouns. But "i*g*o, "we*r*un," "they*f*ly," are verbs. With the help of other prefixes a great variety of verbal forms may be made without the slightest change of the primitive form. Thus "we'll*g*o" is future, "we'd*g*o" is conditional, "we*d*idgo" is a form of the preterite, &c. If for the pronoun a noun is substituted, the verb is recognised solely by its position after the noun in its common case, thus in "– the men run," there is nothing but the fact of "run" following the uninflected plural "the*m*en" to show that it is a verb. Even when there is a noun preceding, the pronominal prefix is often used in common talk, especially among the uneducated; thus we often hear, instead of—"– my brother's coming hometo morrow," "– my brotherhe's coming." . . . The tendency to employ a pronominal prefix is also strikingly illustrated by the impersonal verbs, such as "it*r*ains," "it*h*appens," &c., where the "it" is quite unmeaning.

These facts illustrate the peculiar complexity of English grammar, and the difficulty of attaining a just and adequate view of its characteristic features. In such a sentence as "– the men come," "come" is a verb mainly through its position, in "they *c*ome" because of the pronominal prefix, and in "he*c*omes" both because of the prefix and of the inflexional *s*.

It is important to observe that English has no infinitive, except from an historical point of view. "Come" by itself is, as we have seen, not necessarily a verb at all, still less an infinitive "mood," and it is certainly most in accordance with the instinct of those who speak English naturally to consider "come" simply as a base or common form of the verb, just as "man" is felt to be a common case.

The term "mood" is, of course, quite a misnomer as applied to the infinitive in any language, for the infinitive is nothing but a sort of nominal form of the verb. On the other hand, there are in English several forms of the verb which, on all sound analogy, ought to be included among the moods. These are the

emphatic "*id*ogo," the negative "*id*ontgo," the interrogative "*d*oigo," the negative-interrogative "*d*ontigo," the first of which is quite peculiar to English.

The inflected subjunctive is almost extinct in English. In form it is only in a few cases to be distinguished from the indicative, and its original meaning is so completely lost that English people have great difficulty in learning the proper use of the subjunctive in such languages as German and French, where it is still a living element of the language. We still employ it chiefly in a few stereotyped optative phrases, such as "God save the Queen," and mechanically after certain conjunctions. In the language of the vulgar it seems hardly to be used at all, and such constructions as "if I *was* you" . . . seem to be gradually spreading even among the educated.

Prepositions.—The combination of a preposition and its noun (or pronoun) is identical in meaning with an oblique case of a noun, that is to say, it is a compound attribute. The preposition itself is modified attributively by the noun, and the two together constitute an attribute of some other word. Thus in "he stood by," "by" is an attribute-word modifying "stood," in "he stood by the gate," "by" is modified by "the gate," which is virtually an adverb of "by," and the two together form a compound attribute of "stood." In this example the prepositional compound is equivalent to an adverb, but it may also qualify a substantive, as in "the church in the town," which is equivalent to "the town church," or, in German, "die städtische Kirche."

Sentence-words.—There are a variety of words which have the peculiarity of always forming a sentence by themselves; they might also be called isolated words. These words are: 1. The imperative mood of verbs, "come!" for instance, being equivalent to "I command, or ask you to come;" 2. The "adverbs" *yes* and *no*, which are equivalent to affirmative and negative propositions; and 3. The interjections, many of which, as, for instance, *alas!* from the adjective *lassus*, are quite erroneously described as inarticulate imitative sounds, and which have as much right to be considered parts of speech as the imperatives of verbs.

Concluding remarks.—It is of great importance to obtain a clear idea of the province of grammar as opposed to that of the dictionary—a subject on which considerable confusion of ideas prevails. The popular notion is that the business of a grammar is to explain *forms*, of a dictionary to explain *meanings*. But it is clear that the study of forms involves also a study of their meanings as well, and, indeed, the whole of syntax is nothing else but an investigation of the meanings of grammatical forms.

The real distinction is that grammar deals with the general facts of language, lexicology with the special facts. Thus the fact that "tree" becomes "trees" when we speak of more than one tree, is a general one, for it applies, with certain restrictions, to nearly all other nouns as well; but the fact that the combination of sound that constitutes the sound-group "tree" has the meaning we attach to it and no other, is an isolated one, and there is nothing in the sounds themselves or the way in which they are combined to necessitate one meaning more than another, while even if we were ignorant of the meaning of the word "tree," we should be able to recognise in "trees" the meaning of "plurality," if we met with it in an unambiguous sentence. If we had a rationally constructed Universal Language, in which every letter in a word would be significant and combined according to definite laws, so that the connexion between form and meaning would be at once evident, there would be no dictionary at all—everything would be grammar, and the dictionary would be simply an alphabetical index to the grammar.

The simple question, then, that we have to ask ourselves in determining the scope of the grammar of any language is, how does this language indicate general meanings? The answer to this question is the grammar. If the language chiefly employs what are conventionally termed "inflexions," its grammar will be mainly an "inflexional" one; if position, its grammar will be like that of Chinese, and, to a great extent, of English also, "positional." To assert that Chinese has "no grammar," or "no grammar *properly speaking*," as it is sometimes cautiously put, is simply an eccentric way of stating that it has no *inflexional* grammar.

An essential part of English grammar is *intonation*. An immense number of general ideas, both emotional and purely logical, are expressed in English by the rise and fall of the tones of the voice. The distinction between affirmation and interrogation, subject and predicate, doubt and certainty, &c., are all expressed either partly or entirely by intonation.

The following are, then, the essential elements of English grammar:—

1. Phonology, or an account of the formation of the sounds of the language, their combinations, &c.
2. Phonetic Synthesis, comprising Quantity, Force or Stress, and Intonation. (Voice-timbre, Expression, &c., belong rather to Elocution, which is a special branch of Grammar.)
3. Word Position.

4. Parts of Speech, Inflexion, Agglutination, &c. (including all that is commonly understood as "Grammar.")

The relation of form to meaning may, of course, be considered in various ways. The form may first be considered purely as form, as when we analyse the various degrees of quantity, the exact intervals of intonation, &c., and we may then either consider the various meanings attached to each form, or, starting from the meaning alone, determine what forms are used to express it. In a full grammar all these arrangements must be represented, partially at least. The facts must also be so stated that due prominence is given to the really important elements. Archaisms and fossilised forms must be duly subordinated to the living means of expression.

The different *strata* of the formative elements must also be distinguished. Thus, while the combinations of noun and preposition would be treated at full under the same category as inflexion—"of man" and "man's," for instance, coming together—the traditional inflexions would also be grouped together separately, apart from the later agglutinations. Even merely *nascent* forms and tendencies would also be grouped together separately. It is, for instance, important to observe the tendency to indicate the singular of nouns by prefixes, leaving the plural unmodified; "man," for instance, means "man in general," or, in short, "men," while "the man," or "a man," has a definitely singular meaning. It is of course true that we can also say "the men" in the plural, but it is at least conceivable that in a more advanced stage of English the use of the articles may be confined entirely to the singular, and in that case it is highly probable that the plural inflexions would be entirely lost, so that the distinction between singular and plural would be denoted entirely by prefixes. Compare the French singulars "un chat," "le chat," with the plural "des chat(s)," "les chats."

If English grammar were treated in this way, it would give the student just notions not only of the structure of his own language, but also of language generally, and a solid foundation would be laid for historical and comparative philology. The ordinary grammars, which ignore many of the most characteristic features entirely, and subordinate others to purely exceptional ones, not only give the student an entirely erroneous idea of the structure of English, but also train him to habits of erroneous and superficial observation, the evil results of which are seen every day both in scientific philology and in the practical acquisition of foreign languages.

DISCUSSION.

Mr. TYLOR said that Mr. Sweet's views deserved the most careful consideration, affecting as they do several important points of anthropology. Mr. Sweet's definition of a word as made not by break of sound but by a stress or accent, is in agreement with the views of W. von Humboldt, and fits with Cicero's remarks on word-accent. It has been noticed before that English and other modern languages are capable of agglutinating or incorporating formations like the North American languages. Thus Dr. Latham instances such phrases *catch'em*, *je l'aime*, as being in fact incorporated or holophrastic words. To adopt this part of Mr. Sweet's views would be, in fact, classing English as an agglutinating language. In the speaker's opinion, the common classification of languages, as isolating, agglutinating, and inflecting, requires thorough re-examination and reform, a step to which Mr. Sweet's acute remarks will naturally contribute.

With regard to the plan of a classified vocabulary of ideas, Mr. Tylor considered that it would be of much service to the Society, as guiding travellers in their selection of savage vocabularies, so as to obtain better representations than at present of the stock of words.

The President and others joined in the discussion.

The Director then read the following papers, in the absence of the author, Mr. W. J. Knowles:—

On the CLASSIFICATION *of* ARROW HEADS.

ACCORDING to the leading authorities there are four or five types of arrow heads. Sir John Lubbock adopts the five varieties of Sir William Wilde, viz., *triangular*, *indented*, *stemmed*, *barbed*, and *leaf-shaped*. Mr. Evans, with whom is Colonel A. Lane Fox, arranges those of Great Britain under four leading types, *leaf-shaped*, *lozenge-shaped*, *tanged*, or *stemmed*, and *triangular*. Both these arrangements, I think, do either too much or too little. Arrow heads, in my mind, could as well be brought under three classes, the tanged, indented, and the so-called leaf-shaped. We could include in the stemmed all those having a central tang or stem, whether with or without barbs. Under the name "indented," I believe we could include the few that are triangular, looking on them as not having got the length of being notched, and all others having no indentation would come under the term "leaf-shaped."

If we arrange those arrow heads having a central tang into two classes, stemmed and barbed, the classes are very far from being equivalent, as those wanting barbs are very scarce com-

pared with the barbed variety, and the change from the one condition to the other is so gradual, that I am inclined to regard the barbless condition as accidental; besides we often meet one side of an arrow head barbed and the other barbless. The two classes, triangular and indented, appear to me to be included by Mr. Evans, under the one name triangular, and the type arrow head figured by Sir John Lubbock as triangular is slightly indented, while a more deeply indented one represents the type indented. If the term triangular is used to include all arrow heads having a triangular form, whether indented at the base or not, I do not object to the term; but if we keep up both names, triangular and indented, then I should say, apply the name triangular only to purely triangular forms, and indented to those hollowed at the base, whether much or little. The purely triangular form of arrow head is no doubt scarce, but it bears fully as large a proportion to the indented as the barbless does to the barbed.

The leaf-shaped includes several forms, as well entitled to be classed as types as the barbless or triangular. There is, for instance, a form rounded at the base, and pointed at the small end, another having two points, but still ovate in outline. Another which we could describe as lanceolate; and still another very well marked variety, pointed at the broad end and blunt at the narrow end. The passage from the leaf-shape into a kite-shape, where the edges of the broad end often project outwards, and those of the small end incline inwards, and then into the pure lozenge form, is quite gradual. The true lozenge form, that is, having four edges of equal length, is rather scarce in Ireland, though not rare, but Mr. Evans includes under the term lozenge-shaped, all arrow heads having four straight edges, whether equal or unequal.

The term leaf-shaped is not a very appropriate type name, as some of the other forms come as near in shape to leaves as the so-called leaf-shaped arrow head. In describing leaves we apply the term sagittate to describe such forms as have a resemblance to a very extensive class of indented arrow heads, and some of the tanged and barbed arrow heads have a close resemblance to a cordate leaf. I think *ovate* and *lanceolate* would be more suitable terms to apply to the so-called leaf-shape.

It also appears to me that there are two better marked types among stemmed arrow heads than the barbed and barbless. It will be observed that the smaller type of stemmed arrow heads have the stem and barbs of nearly the same size and length; in fact they are a sort of leaf-shaped or triangular arrow heads with two indentations, whereas in the larger form the tang projects beyond the barbs. This variety is called three-toed by

collectors in county Antrim. You scarcely ever find the larger kind having the same form as the smaller one.

There are also well-marked varieties among indented arrow heads. One kind has nicely pointed triangular barbs, another has a little projection on the inner side of the barb, and a third has the barbs or wings that project on each side of the indentation terminating in a straight edge, but I fear it would only confuse matters to give all those varieties type names, and yet if names are kept up for varieties having as little value we must introduce more type names, otherwise the classification is incomplete. Laying the smaller distinctions aside, I think we might, by a very small alteration, retain most of the old names with which we are familiar and yet improve matters. I should say we might drop the term barbed as Mr. Evans has done, and call all those having a central tang or stem, stemmed, keep up the term indented for those hollowed more or less at the base, and triangular for purely three-sided arrow heads. Supply the terms ovate and lanceolate instead of leaf-shaped, add kite-shaped, and apply the term lozenge-shaped only to those forms that have four straight edges of equal length. Our classification would then be—

Stemmed,
Indented,
Triangular,
Ovate,
Lanceolate,
Kite-shaped,
Lozenge-shaped.

Or if the term leaf-shaped has got too great a hold to be given up, we can retain it instead of the two terms I would introduce, and our classification would then be—

Stemmed,
Indented,
Triangular,
Leaf-shaped,
Kite-shaped,
Lozenge-shaped.

I do not enter into the question of which was the first form. I could show them equally rude of all forms. I should say that examples of high finish are most frequently met with in the indented variety.

Additional Remarks on the FIND OF PREHISTORIC OBJECTS *at* PORTSTEWART.

AT the Belfast meeting of the British Association I gave an account of the discovery of prehistoric remains at Portstewart in the county of Londonderry, which consisted of arrow heads, scrapers, hammers, cores, flakes, bone implements, and bones of the horse, ox, pig, dog, &c., together with edible shells, all mixed up together, and, apparently, of the same age. I stated that the objects were found in pits excavated by the wind among sand-hills. That black layers appear on the sides of those pits from 10 to 30 feet below the present surface, and I gave it as my opinion that those layers represent the surface when the place was occupied by the flint implement makers, and that as the sides of those pits crumble down new objects drop out. The place was known only to myself and one or two friends previous to the meeting of the Association in Belfast, but immediately after, the Ballymena Naturalists' Field Club under my guidance examined it, and obtained a considerable number of objects, not only in the pits but by digging in the black layers, and expressed themselves fully satisfied with the conclusion I had come to.

Without unnecessary repetition, I may say that the number of flints more or less manufactured amounted at that time to about 500. Since then there have been many explorers, and the number of objects which have been found has considerably increased. Even so late as the 20th of July last two gentlemen and myself found in less than four hours' search 3 arrow-heads, 2 beads, 30 or 40 scrapers, and several hammer-stones, besides bones, some of which bore marks of cutting or sawing. At the meeting in Belfast I was able to exhibit a small piece of, what I believed to be, a bone bracelet neatly cut and bored, though I had not found it when I prepared my paper. Though I had not found any trace of metal, I stated that I doubted if it could be made by a flint implement, but I am now inclined to believe that it could. Since then the most remarkable find has been a number of very small stone beads. About a dozen have been found altogether, and all within a few yards of the same spot. They are concave on the one side, and convex on the other, and have a resemblance to some kinds of small shirt-buttons. I at first thought the concavity had been formed by grains of sand rotating on the upper surface, but I have got other beads from various parts in county Antrim similar in appearance, and therefore I believe they were made in this form. It appears to me that one small bead has been cut out of a piece of stone, thus leaving a concavity for another bead of larger

size. It is possible they may have formed part of a necklace that was lost or they may have been placed in an urn at the time of an interment. Several pieces of broken pottery have been found at the same place, which would favour this view. Another addition has been one of those so-called oval tool-stones. Sir John Lubbock in "Prehistoric Times" doubts if these stones belong to the Stone Age, but I see no reason to doubt that they are of the same age as the flint implements found at Portstewart and in the country adjoining, and have been used in their manufacture. One reason for saying so is the finding of this one in connexion with the flint implements, and another reason is the similarity of the markings on the ends of some of those stones to those on the hammer-stones found at Portstewart which were undoubtedly used in manufacturing the flint. I am equally convinced, however, that the hollows on the sides of the tool-stones were not made intentionally for the convenience of the finger and thumb, but were made for some special purpose that had nothing to do with the use of the stone as a tool—the stone being only used as a tool *if hard enough for the purpose.* In fact the use of those stones as tools was in my mind a secondary idea. This is shown clearly, I believe, by many stones which have such pits or hollows showing no signs of having been used as tools, and also by being too soft in many cases, as well as being too large and too small for such a purpose. I have one so large that it severely taxes my strength to lift it—it must at least be three-quarters of a hundred weight, and I have others, again, about an ounce in weight.

The next thing I wish to draw attention to is the cut bones. I have one end of a bone which has been knocked off with a stone after the bone was cut round, about half through on the one side, and through into the hollow of the bone on the other. It evidently has not been cut deep enough, as a splinter has come off with the end. I have another end of a bone which appears to have been cut clean off, and a piece of deer horn not only cut through at both ends, but having a tine cut off at the side. It appears to me that the ancient people wanted the middle of the long bones for some purpose, and they therefore went to the trouble of cutting off the ends. It also appears that they have been cutting the antler of the deer into lengths, and utilising every bit of it, otherwise they would not have taken the trouble of cutting off a tine. Some people have tried to persuade me that flint could not cut bone so well as it appears to have done, if that was the only kind of implement employed on the bones from Portstewart, and in order to test the cutting power of flint I tried an ordinary flake on a piece of common beef-bone, and I found by using it as a saw, with a little water,

that it was a powerful implement, and it left marks very similar to those on the bones I collected. I made several deep cuts in a very short time; but to try what I could do in a given time I took a new part of the bone, and although I frequently cleared out the matter that was clogging the flake, washed with water, and stopped occasionally to examine how I was getting on, I cut through into the hollow of the bone in 14 minutes. I also bored a hole through the bone with a piece of flint, and I am therefore satisfied the hole in the small piece of bracelet could have been made by a flint tool.

Although quite sharp when I commenced cutting, the edge of the flake gradually became blunted without much diminishing its cutting power, and I was much struck with the resemblance it bore to flakes from Larne and other places, the edges of which I, and I believe others, had supposed to be blunted by water-wearing, so much so that I am inclined to believe that those supposed water-worn edges were made by cutting or sawing. If I am correct in this, flint flakes may have been of more importance as tools than we had previously supposed, and they may have been struck off expressly for tools, and not merely to furnish the raw material or rude splinters from which tools were to be made.

Most of the objects referred to in the papers were exhibited.

The President then announced that the Anniversary Meeting of the Institute would take place on January 30th, at 8 P.M.

ANNUAL GENERAL MEETING.

JANUARY 30TH, 1877.

Colonel A. LANE FOX, *President, in the Chair.*

The notice convening the meeting was read by the Director.

The minutes of the last Annual Meeting were read and confirmed.

Mr. M. Moggridge and Mr. G. M. Atkinson were appointed scrutineers of the ballot, which was then declared by the President to be opened.

The TREASURER then read his financial Report for the year ending 31st December, 1876, and said in presenting his statement of receipts and expenditure for that year, that the indebtedness of the Institute had been reduced during the last

THE ANTHROPOLOGICAL INSTITUTE OF GREAT BRITAIN AND IRELAND.

Statement of Accounts for the Year ending 31st December, 1876.

RECEIPTS.

	£	s.	d.	£	s.	d.
Balance, 1st January, 1876:						
At Bankers, Robarts and Co.	93	13	7			
In hand, Office	11	10	2			
				105	3	9
Subscriptions:						
Paid to Robarts and Co., for 1876	68	5	0			
„ Collector „	494	11	0			
„ „ Subscriptions due Jan., 1875	40	19	0			
„ „ Life Compositions	63	0	0			
„ „ In advance	6	6	0			
				673	1	0
Illustration Fund:						
Donation from Sir J. Lubbock				15	5	0
Sale of Publications:						
Messrs. Trübner and Co.:						
Journal. June—December, 1875	22	10	10			
„ December—June, 1876	53	1	5			
Other Publications of Institute	5	19	11			
Messrs. Longmans and Co.	8	12	8			
At Office of the Institute:						
Journal	3	19	5			
Other Publications of Institute	19	5	2			
				113	9	5
				£906	19	2

We have examined the above Cash Receipts and Payments, and find the same correct.

(Signed) CHARLES HARRISON.
W. L. DISTANT.

PAYMENTS.

	£	s.	d.	£	s.	d.
Rent, to 29th September, 1876				108	5	0
Printing:						
Richards. Balance of Account, 1874	78	17	0			
„ Miscellaneous printing, 1875	17	13	0			
Berridge, for Journals, Nos. 13, 14 15, and 16	223	17	6			
„ Miscellaneous printing, 1876	8	8	6			
				328	16	0
Lithography:						
Kell, Rivington, and McClure to Dec., 1875	53	6	9			
Kell. Account for March quarter, 1876	34	10	6			
Whitemen, Irons, and others, to Dec., 1876	14	18	6			
				102	15	9
Salaries:						
Secretary, to June, 1876	75	0	0			
Clerk	76	0	0			
Collector's Commission	33	11	6			
				184	11	6
Postage—Journal	19	4	6			
Letters, Circulars, and Post Cards	12	16	1			
				32	0	7
Advertisements—Messrs. Street, to Dec., 1875				18	4	6
Miscellaneous:						
Library, Binding, &c.	2	19	3			
Special Meeting, expenses of	4	16	0			
Stationery for 1875	9	12	6			
„ to September, 1876	4	12	4			
Receipt and Bill Stamps	2	5	0			
London Library	3	0	0			
Papyrograph, Insurance, &c.	9	11	8			
				36	16	9
Housekeeper:						
Ayres, gratuity	15	0	0			
Coals, Lights, &c.	11	12	9			
Parcels, Repairs, and Sundries	10	3	6			
				36	16	3
Cash Balances:						
At Banker's	57	8	4			
In hand	1	4	6			
				58	12	10
				£906	19	2

year from £243 13*s.* to £105 3*s.* 9*d.*, after allowing for the cash balances. This was due in part to the settlement of a disputed account, and to the saving in refreshment and salaries. There has also been a considerable diminution in some other items of expenditure. The proceeds arising from the sale of the Journal, and other publications of the Institute, had been considerably in excess of any former year. The amount realised by the sale of the Journal was nearly £80. The amount from sales in the half-year ending December 31, 1876, will be more than in the corresponding half-year in 1875. The sum likely to be realised from over-due subscriptions is estimated at about the same sum in both years.

Mr. MOGGRIDGE moved and Mr. CHARLESWORTH seconded the adoption of the Report, with a vote of thanks to the Treasurer for his labours and success in improving the financial state of the Institute.

Carried unanimously.

The Director then read the Report of the Council for 1876:—

REPORT *of* COUNCIL *of the* ANTHROPOLOGICAL INSTITUTE *of* GREAT BRITAIN AND IRELAND *for* 1876.

THE Institute has held thirteen ordinary meetings, one special, and one anniversary meeting during the year, at which the following communications were read:—

1. On the Maori Race of New Zealand. By W. S. W. Vaux, Esq., F.R.S.
2. On Stone and other Implements from New Zealand. By Dr. James Hector, F.R.S.
3. On the Origin of the South Sea Islanders. By Rev. Wyatt Gill, B.A.
4. On some Traditions of the Hervey Islanders. By Rev. Wyatt Gill, B.A.
5. The Tombs in the Island of Rotumah. By W. W. Wood, Esq.
6. On the Ethnography of Scotland. By Rev. John Earle, M.A.
7. Remarks on Stone Implements exhibited. By Capt. M. Campbell and A. W. Franks, Esq., F.R.S.
8. On the Sarmatæ. By H. H. Howorth, Esq., M.A.
9. On the Pelagosa finds. By Vice-Consul Topick: translated by Capt. R. F. Burton.
10. On Japanese Mythology. By E. Burnet Tylor, Esq., F.R.S.
11. On the Term Religion as used in Anthropology. By W. L. Distant, Esq.
12. On the Inhabitants of New Guinea. By Dr. Comrie, R.N.
13. On the Politics, Religion, and Commerce of Old Calabar. By J. B. Walker, Esq.
14. On the Origin of Minerals. By Alfred Tylor, Esq., F.G.S.
15. On some Apparent Coincidences of Custom and Belief in Chaldæa and Western Europe. By A. L. Lewis, Esq.
16. On Prehistoric Names of Weapons. By Hyde Clarke, Esq.
17. On the Ethnography of the Cimbri. By Canon Rawlinson.
18. On the Hunebedden. By Dr. Lubach.
19. On the Anthropology of Central Africa. By Lieut. Cameron, R.N., C.B.
20. On the Natives of Nicobar Islands. By W. L. Distant, Esq.

21. On a Collection of Skulls from Mallicollo and Vanikoro. By Prof. George Busk, F.R.S.
22. On Signor d'Albertis' Explorations in New Guinea. By A. W. Franks, Esq., F.R.S.
23. On the South Sea Islanders. By W. L. Rankin, Esq.
24. On the Worship of Siva in Central America. By Hyde Clarke, Esq.
25. On Flint Cores. By Dr. Gillespie.
26. On Chalk Marks at Cissbury. By J. Park Harrison, Esq., M.A.
27. On the Term Mediterranean. By J. Bell, Esq.
28. On Excavations in the Black Burgh Tumulus, 1872. By Col. A. Lane Fox, F.R.S.
29. On Excavations in Seaford Camp. By Col. A. Lane Fox, F.R.S.
30. On Excavations in Seaford Cemetery. By F. G. H. Price, Esq., and John E. Price, Esq.
31. On the Votive Statuettes from Tanaga. By Col. A. Lane Fox, F.R.S.
32. On the Laplanders. By A. Humboldt and V. H. V. Horek.
33. On the Tribes of British Guiana. By the Rev. W. Harper.
34. On the Javanese. By M. Kiehl.
35. On the Ethnology of the Germans. Part I. Saxons of Nether Saxony. By H. N. Howorth, Esq., M.A.

Twenty-seven ordinary Members have been elected during the year.

Commander Cameron, R.N., C.B., D.C.L., M. Emile Cartailhae, and Mr. Ernest Chantre have been elected honorary members, and the Rev. W. Wyatt Gill corresponding member.

Ten ordinary members have withdrawn since the last anniversary meeting.

The Institute has lost, through death, Viscount Amberley, Mr. R. M. Nunn, Dr. Richard King, Mr. T. G. B. Lloyd, Sir Duncan Gibb, Sir Richard Hanson, Sir John Cordy Burrows, Dr. Lonsdale, Captain Rowcroft, Mr. D. W. Nash, Mr. L. A. Lucas, Mr. David Forbes.

M. Karl Ernst Von Baer, hon. member; Mr. A. C. W. Lennox, special member; Mr. W. Bollaert, corresponding member; and Mr. F. J. Draper, local secretary.

The names of four members have been removed from the list for non-payment of arrears of subscription.

The following are the names of donors to the Library and Museum during the past year:—

The Society of Arts and Sciences, Batavia; F. W. Rudler, Esq.; the Geologists Association; the Editor Revue Scientifique; Royal Asiatic Society of G.B. and I.: Royal Geographical Society; Canadian Institute; Dr. Topenard; J. J. Monteiro, Esq.; Royal Society; Editor of Nature; Messrs. Longman and Co.; Moscow Imperial Society of Naturalists; C. Fitzgerald, Esq.; Smithsonian Institution; the Editor, Matériaux pour l'Historie de l'Homme; Royal Historical and Archæological Association of Ireland; Berlin Anthropological Society; Prof. F. V. Hayden; the Editor Archiv. für Anthropologie; J. Boult, Esq.; Hungarian Academy of Science; East Indian Association; W. E. Stanbridge, Esq.; Paris Anthropological Society; A. L. Lewis, Esq.; Geological Society of Vienna; Bengal Asiatic Society; Vienna Imperial Academy of Sciences; American Philosophical Society; Society of Biblical Archæology; Ettore Regalia; John Evans, Esq.; Joseph Sabine, Esq.; Thomas Croft, Esq.; B. Stanton, Esq.;

Social Science Association; Royal United Service Institution; R. H. Tiddeman, Esq., Royal Society of Tasmania; Rev. Henry Stretton, M.A.; Krakowie Academy of Sciences; Belgium Royal Academy of Sciences; C. Stewart, Esq.; Scotland Society of Antiquaries; George Harris, Esq., LL.D.; Lieut. R. H. Armit, R.N.; Peabody Academy of Sciences; Bombay Branch of the Royal Asiatic Society; Berwickshire Naturalists Field Club; London Society of Antiquaries; Glasgow Philosophical Society; Boston Society of Natural History; Dr. N. M. Hentz; Lieut. G. M. Wheeler; Dr. H. V. Hölder; New Zealand Institute; Royal Colonial Institute; Asiatic Society of Japan; Imperial Academy of Sciences, St. Petersburgh; Anthropological Society of Spain; Manx Society; M. L. Mathieu; Congrès International d'Anthropologie d'Archéologie Prehistoriques; Dr. J. H. Baxter; Royal Society of Literature; Royal Institution of Cornwall; Devonshire Association; Board of Admiralty; Registrar-General for New Zealand; the Right Hon. Lord Arthur Russell, M.P.; Prof. Agassiz; St. Louis Academy of Science; State Board of Health, Massachusetts; E. Canton, Esq., F.R.C.S.; Rev. A. C. Geekie, D.D.; E. W. Brabrook, Esq.; Literary and Philosophical Society; Royal Society of New South Wales; Manchester Public Free Library; Dr. James Hector, F.R.S.; Mr. Moggridge.

Colonel Lane Fox moved, and Mr. A. L. Lewis seconded the adoption of the Report. Carried.

The PRESIDENT then read his Annual Address.

I regret that press of business has prevented my doing more than review cursorily the work of the past year, adopting the same classification as in the address of the year before, and including the fourth number of Vol. V, which was unavoidably omitted on that occasion.

DESCRIPTIVE ETHNOLOGY.—*Seven Papers.*

1. "Anthropological Notes on New Guinea," by Dr. Comrie, R.N. These are notes made by Dr. Comrie, when serving as surgeon on board H.M.S. "Basilisk," in 1874, and they relate to certain tribes between East Cape and Astralobe Bay, which have not previously come in contact with Europeans. The paper was accompanied by an exhibition of 15 skulls of the Aborigines, and numerous works of art and implements obtained by the author. Dr. Comrie's observations lead him to believe that the peculiar growth of the hair of the Papuans, like the tufts in a shoe brush, is caused by the mode of dressing, and is not congenital. Several sections of the hair of these people, microscopically examined, showed that it presented the long oval section already noticed by Dr. Pruner Bey, and which is more or less

common to all the black races of mankind. Dr. Comrie noticed that in New Guinea and some of the other islands, the coast tribes are fairer, or rather less dark than the inhabitants of the interior, which he attributes to local causes, such as feeding upon fish rather than to an admixture of race. This opinion receives some confirmation from an account of the crew of the "Strathmore," which has since appeared in the September number of "Blackwood's Magazine," by Mr. Wordsworth, who was wrecked in 1875, upon one of the rocks of the Twelve Apostles, an island of the Crozet group, and spent upwards of six months upon the rock. He says that in less than four months after feeding upon penguin's eggs, the complexion of the shipwrecked people entirely changed: black hair turning brown or red, and that of fairer people quite flaxen. All the birds of the island also were quite white. The hair and complexion of these people, however, regained its original colour in less than a month after being removed from the island. Considering the facilities afforded to coast tribes for intermixture with fairer races, and some other circumstances to which I alluded in my remarks upon Dr. Comrie's paper, I think we must still hesitate before accepting food and climate as the immediate cause of the change of colour observed. The facts, however, recorded by Dr. Comrie, with his interpretation of them, are well worthy of the attention of anthropologists.

2. "Notes on the Politics, Religion, and Commerce of Old Calabar," by James B. Walker, Esq. Amongst other customs related by the author, their ideas respecting a future state are of interest. They imagine the condition of the departed spirit to be pretty much the counterpart of what it has been here. They return and visit the scenes they formerly occupied, inflicting sundry punishments upon those who have failed to show them proper respect, more especially those who have omitted to make proper offerings at their obsequies. The author has seen as much as £100 worth of goods thrown into the grave of a chief. The survival of the custom of the sacrifice of wives and slaves at death, which formerly existed, but has been abolished through

the influence of the missionaries, has here taken the form of imprisonment during the period of the funeral obsequies, which sometimes last several years. During this period the prisoners are forbidden to hold any intercourse with the outer world, or to wash their bodies or change their raiment, and numbers who have no friends to supply them with the necessaries of life die during the period of incarceration.

This transition phase of the superstition of human sacrifices appears to me to be one which is very likely to have been followed in other countries, for whilst the sentiment of humanity would be vindicated by the abolition of death, the religious fanaticism of the people would be appeased by keeping the victims out of the way until the time of mourning had passed by and been forgotten.

3. "On the Anthropology of Central Africa," by Lieutenant Cameron, C.B., R.N. The observations of Lieutenant Cameron upon the people of the country he passed through, related in the simple style of a sailor, and without pretension to anything more than that most valuable of all anthropological requisites, the truth and accuracy of the narrator, are of special value to us, from their affording the first account of the inhabitants of all that large tract of Central Africa which lies between the 4th and 12th parallel of latitude, which he has been the first traveller to explore. He identifies the Wanyamuesi with the Hovas of Madagascar, a people of Malay extraction. He tells us of a tradition prevalent in these parts, that the Kafirs are descended from heathen Arabs before the time of Mahomet. Manuema is, *par excellence*, the black country of Africa, where smithies 50 feet in length by 30 wide, having as many as 20 bellows at work in them, are to be found, producing from 150 to 200 lbs. of metal at a single smelting, and the shapes of the weapons which he has brought home from thence are such as to prove connection with Angola and the Gaboon. On Lake Mohyra he found the people living upon platforms supported upon piles, which were the only lake dwellings he met with in his travels. Stone implements, properly so called, were not in

use in any part of the region he traversed, nor could he discover any trace of their employment in earlier times; this, however, will not be regarded by anthropologists as evidence of the non-existence of a stone age in these parts.

The only relics of an earlier civilisation which he met with in his travels, consisted of a number of small pieces of copper, in the form of a St. Andrew's Cross, which are dug up near the Lualaba. Similar crosses of larger size are still used as ingots for the export of copper from this region. Lieutenant Cameron pays a high tribute of praise to the accuracy and fulness of Captain Burton's narratives, which he describes as a verbal photograph of the countries through which he passed. This testimony to Captain Burton's merits is especially acceptable to us, who know that amongst modern travellers he is one of the few whose powers of observation have been stimulated by profound anthropological research.

4. "On the Inhabitants of the Village of Katau, New Guinea, nearly opposite Cape York, and of Kiwai, 25 miles from the entrance to the Fly River," by Signor S. M. D'Albertis. The houses of Katau resemble those of the north-west Coast of New Guinea, and skulls are suspended near the entrance. On the graves both provisions and bows and arrows are deposited, which custom prevails also on the west of New Guinea. The colour of the skin here is said to be copper-coloured; not so black as at Cape York. The hair when cut short, is seen to be equally distributed over the scalp, but assumes a tufted appearance when it commences to grow, owing, no doubt, to its growing in curls. This agrees with Dr. Comrie's observations. Sr. D'Albertis believes the population to be much mixed upon the coast, and thinks that the typical peculiarities of the New Guinea race will not be known until the interior is better explored. At Kiwai the hair is also distributed equally over the scalp. In colour the inhabitants resemble those of Katau, but are a shade lighter. The average height is given at 5 feet 8 inches, but it is not stated whether this applies to the males or females. Like the people of Katau, the practice of hunting for heads prevails; but

here they have a peculiar method of preserving them, covering the face with a mask, formed from a preparation of wax and resin. The eyes are represented by coarse shells, and the interior of the skull is filled with stones, hard seeds, and pumice-stones, kept in by dried grass. When swung about these produce a rustling noise, from which it is inferred that they are used in dances. A skull similarly prepared was sent to me by Commodore Goodenough, from Mallicollo, and this skull was also filled with hard seeds. Sr. D'Albertis is still travelling in New Guinea, and it is probable that further information will be received from him.

5. "On the Physical Condition of the Laplanders," by Alexander v. d. Horck. The Laplanders are divided by the author into the nomadic, or mountain, and the sea, or fish Laps. The former are spread over Norwegian, Swedish, and Finnish Lapland, and their stature is given at 1·5 metres, but as it is not stated whether this applies to the males or females, the figure is of no scientific value.

The current opinion that all blonde people belong to the Indo-Germanic race, whilst the Turanians are dark, is not borne out by the observations of the author, who found that many of the Laps are blonde, having golden hair and blue eyes. Although the majority of the Laps belong to the Lutheran Church of Scandinavia, the survival of their ancient faith is shown by their belief in the efficacy of mystic charms. An interesting account is given of the tumuli in which their ancestors are buried, sometimes packed up in a kind of sledge, and at others wrapped up in layers of birch bark, ornamented with curious drawings of the bear, wolf, and reindeer, as well as pictures representing the former life of the Laps. We may notice also as interesting, the survival of the custom of burying the dog with the dead; a kind of snail shell, called hundsjail (or dog soul) is buried in place of the animal itself, which is of great value to the Laps.

6. "Notes on the Javanese," by A. H. Kiehl, Esq. The inhabitants of Java consist of two branches, the Malays, con-

stituting one branch, and the Madurese and Ballinese the other. Notwithstanding many points of resemblance in colour and stature, they are easily distinguished by physical peculiarities—their manners and customs are very fully described.

7. "On the Inhabitants of the Admiralty Isles," by H. N. Moseley, Esq., late naturalist on board H.M.S. "Challenger." The examination of the island made by the expedition was confined to the extreme north-western portion of the northern coast of the main island in the neighbourhood of Nares Bay.

The information contained in this valuable paper is enhanced by the fact that previously to the visit of the "Challenger" in March, 1875, no European had ever landed in the island. The natives are described as being darker than the Papuans of Humboldt Bay, New Guinea, and the young are lighter than the adults. The hair of the Papuans of Humboldt Bay appears to be coarser, but in other respects identical with that of the Admiralty Islanders. The author gives a detailed account of the expression of the countenance of natives under the conditions of rage, suspicion, laughter, grief, &c. An exhibition of the objects obtained by Mr. Moseley in the Admiralty Isles showed unmistakeable connection with the arts of the New Guinea people described by Dr. Comrie, many of the ornaments being absolutely identical.

ARCHÆOLOGY—*Thirteen Papers.*

1. "On a Skull found in some Pits exposed by a Railway Cutting at Fulbourn," by Hooper May, Esq.

2. "On a proposed International Code of Symbols for use in Archæological Maps," proposed by Monsieur Ernest Chantre and communicated by John Evans, Esq., F.R.S. This code of symbols has been drawn up by M. Ernest Chantre, and is intended to introduce as far as possible a uniform system of marking prehistoric remains throughout Europe. The code appears to be satisfactory upon the whole, although some trifling improvements might perhaps be suggested.

It would be very desirable that some such system should be

introduced into our Ordnance maps. Having had frequent occasion to use them for Archælogical purposes, especially the 25-inch map, I have found them to be very defective in this respect, many prehistoric objects being omitted, and others wrongly marked. The Officers of the Royal Engineers employed on the survey are usually glad to receive suggestions from Archæologists, and on one or two occasions when I have communicated with them on the subject, a non-commissioned officer of Engineers has been sent to make the necessary corrections, but an immense number of interesting objects are omitted, and as the 25-inch map is being proceeded with rapidly, the opportunity is being lost. It would be desirable that a competent Archæologist should be attached to the Ordnance Survey, and the attention of Anthropologists may be usefully directed to this matter.

3. On the "Tombs in the Island of Rotumah," by W. W. Wood, Esq. The structure figured in the illustration accompanying Mr. Wood's note appears to resemble the platforms described as existing in Easter Island, Marquesas, and the Sandwich Islands, and which are not unlike similar structures in Central America: other tombs, however, are described in Rotumah, which resemble more nearly the cromlechs of Europe.

4. On the "Animal Remains found in Cissbury," by Professor Rolleston, F.R.S. It is to me a very satisfactory circumstance that the careful study of the animal remains which Professor Rolleston has now had leisure to make, should confirm so fully the conclusions which upon other grounds I had come to as to the relative antiquity of the several parts of this work.

The absence of the dog, Professor Rolleston observes, in these later discoveries in Cissbury, would be remarkable did we not bear in mind the short time the pits remained open, which is proved amongst other evidence by the paucity of animal remains, and for the same reason perhaps the absence of the Bos primigenius which, as well as the dog, were found in the pit previously excavated by Mr. Tyndal, may be accounted for. Nor does the wild boar appear in any of these later excavations.

All the bones of horse found, were from superficial deposits, from which fact, though affording of course negative evidence only, Professor Rolleston argues that had it been domesticated by the original excavators of the pits, we should have obtained some osteological evidence of their success lower down.

In the skeleton shaft, the fact of the human bones being entire, whilst those of the animals associated with it were broken is significant, as showing that the two must have found their way into the pit through different causes. Professor Rolleston confirms in the fullest manner, by means of the animal remains, the relatively greater antiquity of the shafts to the entrenchment, pointing out that the snails found in the former must have crawled down the sides of the shaft when it was open, most of them having their opercula attached to them, and before the red deposit of the bottom of the ditch had formed over them. The paper by the careful attention that is devoted to the anatomical details of the human and other animal remains, adds greatly to the scientific value of the discovery. Of the details of the skeleton it is unnecessary to say much, the relatively large size and cubic capacity, amounting to 105 inches, of this undoubtedly prehistoric female skull of the stone age, will be noted with interest, exceeding as it does the immense majority of the male skulls cubed and recorded.

5. "Stone Implements from Honduras and Turks and Caicos Islands," by Captain Melfort Campbell, with remarks by A. W. Franks, Esq. The implements resemble in character others which are in different collections from Honduras. A letter from Mr. George Gibbs, a resident in Turks Island, Bahamas, suggests that the resemblance of the stone implements found in the West India Islands to those of Yucatan leads to the inference that the Carib inhabitants of these islands migrated from thence rather than from the north. I believe, however, that the connection between Florida, the Mississippi and Central America, can be demonstrated by means of art forms. The stone implements in Turks Island are supposed by the natives to be thunderbolts.

6. On the "Hunebedden or Cromlechs in Holland," by D. Lubach, M.D., giving a more detailed account of some of them than has hitherto appeared.

7. "Note on some Human and Animal Remains found at Bath," by Miss A. Buckland.

8. On the "Use of Flint Cores as Implements," by Dr. Gillespie. The author believes that from the flat top of the flint cores being frequently at an angle with the facets, and from the marks of abrasion found on the top corners, they may have been used as planes. That some of them may have been so used is not in my opinion improbable, but the abrasion at the corners may in most cases have been caused by the splintering of the flint when the flakes were struck off, and the angle formed by the flat top with the facets is, with very little doubt, accidental.

9. "On Marks formed upon Chalk at Cissbury," by J. Park Harrison, Esq., in which Mr. Harrison expresses his belief that certain scratches found upon the side walls of the galleries represent an archaic character of some kind. I have in the discussion upon this paper stated my conviction that Mr. Harrison's hypothesis is not proved.

10. On the "Black Burgh Tumulus, Brighton," by Col. A. Lane Fox. The chief question raised during this investigation was as to the kind of pottery in use for ordinary household purposes during the bronze age of the tumuli. Pottery of a superior quality to that employed for cinerary urns was probably in use at that time for ordinary purposes, but it is most likely that the turned pottery found in this tumulus belonged to a secondary interment of a later period. The examination of this tumulus confirms the previous investigations of Canon Greenwell, by showing that a small triangular knife dagger is the only kind of bronze weapon, except the plain triangular axe blade that is usually found in the tumuli of this age in England. The question as to the uses of certain cylindrical or basin-shaped holes in the chalk floors of tumuli was also discussed.

11. "Excavations in the Camp and Tumulus at Seaford,

Sussex," by Col. A. Lane Fox. The excavations carried on with the assistance of Mr. Park Harrison and Captain Dillon, showed that a tumulus within and almost contiguous to the rampart contained stone implements only, including a polished and an unpolished flint celt, several flint saws and an arrow head, and further that there was evidence of a polished celt having been broken up over the grave, and the pieces deposited with the dead, suggesting superstitious rites in connection with the souls of the departed. The excavation of the ditch of the rampart showed that it had silted up three feet since the Roman period. It has been shown that important evidence as to time may be obtained by examining the silting of rampart ditches and the character of the pottery found at different levels. For although it may be true that the Romans in Hungary and perhaps elsewhere used a kind of glazed pottery, which they did not employ in Britain, yet the pottery of different ages is sufficiently characteristic in this country to determine the period to which it belongs.

12. Notes on the Romano-British cemetery at Seaford, by F. G. Hilton Price, Esq., and John E. Price, Esq. These excavations confirm the results of Mr. Boyd Dawkins's examination of the cemetery at Hardham, Sussex, and establish conclusively the fact that flint flakes and scrapers continued to be used in Britain with interments as lately as the Roman age. The interest of this fact is enhanced by the contemporaneous discovery by Dr. Schliemann of obsidian flakes in the grave, said to be that of Agamemnon, and certainly of the bronze age of Greece, associated with relics of a high style of art. Another parallel may also be drawn between the two, viz., at Seaford a layer of stiff clay was found deposited over the urns after interment, and in like manner the burnt bones of Agamemnon and his companions were found to be covered with a layer of clay four inches thick. Whether this clay was intended simply to preserve the remains, or was introduced with some other signification, is a point upon which a good deal might be said if time permitted. Before leaving the subject of this paper, I desire to

make a few observations upon a note which has been added to the paper since it was read, and which is to the following effect:—Speaking of the camp on the hill, the authors say, "These fortified positions were probably, as suggested by the Rev. E. Turner in writing upon the military earthworks of the South Downs, constructed for the defence of the valleys of the tidal rivers by the intervention of which the continuous line of the South Downs is occasionally broken." Now, although it is quite true that the intention of a fortified post is much more readily perceived by any one who has been in the habit of studying ground with a view to defence, technical knowledge being of the utmost value in this as in all other branches in explaining the intention of prehistoric remains whose history is lost, yet I am far from thinking that the art of war possesses any great medicine which ought to deter non-professional men from forming a sound opinion upon such a question as this, provided always they will take fully into consideration the facts upon which a sound opinion ought to be formed. Space does not permit me to dwell at length upon the subject here, but I have done so more fully in my paper on the Hill Forts of Sussex, which was published in the Archæologia,* and I have there demonstrated the error into which, I believe, Mr. Turner and others have fallen in regard to this matter. The rules of defence have been the same throughout all time, and are extremely simple. And simplest amongst those questions which I would submit to those who think that an organised system of coast defence, such as we have never attained to in modern times, existed in the age of bronze is this,—How, I would ask, is it possible that these forts could have been constructed for the defence of valleys which they do not command?

They are situated on the summits of the hills far beyond the range of the tidal rivers, with the weapons at that time in use. They are not confined to the coast; do not even exist in any unusual number on the coast, except near Beachy Head, where the sea happens at the present time to be eating away the high

* Archæologia, Vol. xlii.

hills upon which the forts stand. They are spread over the interior, not of the South Downs only, but of all the hilly country of Britain, as far as the north of Scotland, and a like distribution of them exists in France and elsewhere. They are all upon the tops of the hills, and are essentially hill forts and not valley defences.*

The prehistoric earthworks of this country are of two kinds, representing two different phases in the civilization of the people. Firstly, the period of the hill-forts, when each tribe had its stronghold to resort to when attacked by neighbouring tribes. Secondly, a period of migration to which the continuous lines of dyke fortification belong, when people moved in large and comparatively well-organized bodies. These dykes, I believe, mark the Scandinavian immigration in England from east to west. To these two prehistoric periods may be added, if we take in modern times, which for anthropological purposes we ought to do, the period of strategical fortresses, when armies moved in very highly organised bodies, accompanied by vast stores of material, which made them jealous of their communications, and unwilling to leave strong places behind them on their path. Such are the modern fortresses of our own time, but no one would dream of applying the principles of strategy which are applicable to this period, to such places as the hill-forts of the South Downs. We must look rather to the savages of Central Africa or New Zealand for an illustration of the mode of life to which they apply.

13. "Remarks on Votive Statuettes found at Tanagra Bœotia," by Col. A. Lane Fox. The question was raised whether the votive statuettes found in the graves, many of which show evidence of the best period of Greek art, are to be considered as survivals of the practice of human sacrifice, or as having a mythological signification.

The view taken by me is that although they undoubtedly

* The argument used by Mr. Fergusson in his pamphlet since published on the Brochs of the Orkney and Shetland Islands, pp. 14—15, to prove that they were not intended for coast defence, applies to this case.

had no mythological import at the time they were interred, they had their origin in mythological sources.

14. A second paper by Mr. Park Harrison, in the discussion upon which he reaffirms his matured belief that the pick marks and other idle scratches found in the galleries at Cissbury are letters inscribed by the prehistoric miners, and I reiterate my equally matured conviction that there is nothing of the kind to be seen.

ETHNOLOGY.—*Ten Papers.*

1. "On the Probable Origin of the Maoris," by W. S. Vaux, F.R.S. Viewing the traditions, physical constitution, and language of the Maoris, the author comes to the conclusion that in common with the Polynesian race in general, they have sprung from the Mongols of Central Asia, having been driven to the ocean by successive waves of migration down the valleys of the Irrawaddy, Brahmaputra, Yang-tze, and Hoangho. He discards the idea of their being a mixed race, for which, however, much evidence can be shown. Speaking of their carvings, he says, it would be of great interest could we trace on the continent of Asia, or the adjacent islands, any manufactured work nearly resembling that of New Zealand, but he concludes that none such can be traced. On the other hand, I believe that identical patterns of carving can be traced in New Zealand, New Guinea, and Assam. In the two former, the resemblance is so close as to afford certain proof of connection; this, however, affords no proof of identity of race, and the races are, no doubt, very different. It is only through physical constitution, and not by means of either language or arts that racial connection can be traced with confidence. Although the use of the bow penetrated as far as New Guinea, and from thence eastward across the Pacific, it was unknown in New Zealand at the time of its discovery.

2. "On certain Early Forms of Stone Implements in New Zealand," by James Hector, Esq., M.D., F.R.S. Although this paper has an archæological title, the treatment of it is ethnological,

and I have, therefore, classed it under this heading. Dr. Hector concurs in the general opinion of Mr. Vaux, that the Maoris were immigrants in common with other Polynesians, but considers the question still open as to whether the whole Maori population had a common origin from one migration. He differs from the opinion of Dr. Haast, given in the *Journal of the Ethnological Society*, that the Moas were destroyed by a race of autochthones, and referring to the position of certain stone implements found by Dr. Haast beneath deposits which he believed to be of great antiquity, expresses his belief that the alluvial deposits on that coast take place with great rapidity, owing to the sudden alteration in the courses of rivers.

3. "On the Origin of the South Sea Islanders," by the Rev. Wyatt Gill, B.A. Mr. Gill combats the opinion of Mr. A. Wallace, F.R.S., that the Polynesians are descended from a race which once overspread a vast submerged southern continent, and he believes that the progenitors of the present race entered the Pacific from the south-eastern part of New Guinea, from whence they were drifted eastwards in canoes, and peopled the several islands. The great variety of opinions upon this subject to which I have adverted, points to the deficiency of reliable data, and to the necessity of imparting, if possible, a fresh impulse to our departments of descriptive ethnology and physical anthropology.

4. "On the Ethnology of Scotland," by the Rev. John Earle, M.A. Mr. Earle's paper follows in the lines of the paper of the Rev. J. C. Atkinson in *Journal of the Ethnological Society*, and tends to show that, as East Anglia was peopled from Denmark, so Northumbria and South Scotland received immigrants from Norway. This he shows by resemblances in the language of the two districts, comparisons of which have been rendered practicable by the publication of Vigfusson's Icelandic dictionary.

There is nothing surprising in the discovery that this part of Britain has partaken of the general westerly movement of peoples which has prevailed throughout Europe since the commencement of history, for although the history of this particular

portion of the British isles has been lost, we have evidence in the position of the dykes on the Yorkshire coast, to which I have drawn attention elsewhere, that a large and organised army of invaders entered England and fought their way inland from Flamborough Head, and it is unlikely that any but northmen should have landed in this spot.

5. "On the Sauromatæ or Sarmatæ," by H. Howorth, Esq. Some authors contend that the Sarmatæ were Germans, others, amongst whom is Dr. Latham, that they were Slaves, but Mr. Howorth is confident they were not Slaves, but were the ancestors of the Ossetes, who inhabit the northern part of the Caucasus at the present time. The Sauromatæ, according to Diodorus, were a tribe of Medes, which were carried northward from Asia Minor by the Scythians. The word sar-matæ is compounded of the particle sar or sauro and mede. Sar, according to the author, is the Ugrian term for yellow or red, and means the red or yellow Medes; there were various tribes of the Sar-matæ distinguished by qualifying particles, and amongst them the Taxa-matæ. Taz is the same as As and Taxa-matæ, therefore, means the As-Medes. The As or Asi are a well-known race in the Caucasus, from which the continent of Asia derived its name. These Asi are the same as the Ossi or Ossetes, who now inhabit this region. They differ from the other tribes of the Caucasus in having blue eyes and red hair, thus retaining to this day the characteristics of the Sar-matæ or yellow Medes. I do not pretend to criticise the conclusions arrived at in this paper, to do which with advantage would require all the research which Mr. Howorth has devoted to this interesting subject.

6. "On the Ethnography of the Cimbri," by Canon Rawlinson, in which the author supports the view of the Celtic origin of the Cimbri with all the learning which he is so well known to possess on these and similar branches of inquiry, urging, in its behalf, the resemblance of the name to that of the Celtic Cymri, also the Celtic character of the names of their chiefs, the assertions of many writers, the fact that the Romans used

the Celts as spies in their camp, and some resemblances in their manners and customs. On the other hand, we have for their German origin, the authority of Cæsar, Strabo, Pliny, and Tacitus, also their alliances with the Teutons, and their geographical position in the region of the Germans between the Rhine and the Elbe.

7. "Some Notes on the Nicobar Islands," by W. L. Distant, Esq., which is a sequel to a former paper by him on the same subject, giving a list of authorities on the island, and mentioning, amongst other things, their superstitious dislike to the fabrication of pottery, also his belief that the inhabitants of the Great Nicobar have a close alliance to the Andamanese and the Semangs of the Malay peninsula.

8. "On the South Sea Islanders," by W. C. Ranken, Esq. The author discards Mr. Wallace's idea of the Polynesians being the autochthones of a submerged continent, and believes them to be a mixed race. He thinks the islands were first occupied by Papuans, and a later race, which he terms Mahori, migrated from the Indian Archipelago into Samoa first, and from thence peopled the different islands, partly displacing and partly mixing with the Papuans. He traces their migration from Samoa by means of traditions and customs, and believes that though not Malays, they are a kindred race to the Malays and of the Mongolian stock.

9. "Note on the name Mediterranean," by F. Jeffrey Bell, Esq. Although the author discusses the employment of the term as applied to race by some authors, it is but justice to him to say that he is no advocate for the use of it. Viewing man as a migratory animal, the various races which have drifted westward from Asia into Southern Europe have been arrested by the Mediterranean Sea, which, by necessitating a fixed abode, has caused civilisation to spring up along its eastern and northern shores; we may be safe, therefore, in using the term Mediterranean as applied to culture if not to race. The upshot of his paper is that he discards the use of the word Mediterranean, and advocates the grouping of the Aryan and Semitic languages

under the term Aryo-Semitic. He appears, however, to place more reliance upon language generally as a test of race, than many anthropologists will be disposed to allow.

10. "On the Ethnology of Germany," by H. Howorth, Esq. The author contends that the Saxons north of the Elbe were immigrants, and he traces their migrations by the topography of the surrounding districts and by the names of men and objects.

COMPARATIVE ANATOMY.—*Two Papers.*

1. "On the Scaphoid Skull of a Pole," by Dr. I. Koperniki, giving the anatomical details.

2. "Notes on a Collection of Skulls from the Islands of Mallicollo and Vanikoro," by Professor Busk, F.R.S. These skulls were collected for me by Commodore Goodenough before he died. They are the first from this island that have been received, and they establish the fact of the practice of artificial deformation existing in Mallicollo as determined by Mr. Busk's examination of them. The frontal region is much flattened, and there is also a marked depression behind the vertex. Dr. Barnard Davis had noticed artificial deformation in a skull from Nukahiva, one of the Marquesas isles, and Mr. Wood, in some remarks upon the paper, states that he has seen the same thing amongst the natives of Fortuna and Wallis's Island or UVEA.

BIOLOGY.—*One Paper.*

"A Report to the Anthropometric Committee of the British Association on Measurements of the 2nd Surrey Militia," by Col. A. Lane Fox. The result proves that dark hair and grey eyes are unmistakeably typical of this district. The stature, upon the whole, is low.

PHILOLOGY.—*Two Papers.*

1. "On Prehistoric Names of Weapons," by Hyde Clarke, Esq. Some of the connections given in the table of like words

for different weapons are difficult to follow, but others certainly strike us as remarkable, considering the wide separation of the people by whom they are used. Thus, the word for spear is said to be in India *kipi* and *taka-ba*, and in the African Haussa language, *kebia* and *takobi*. The word in Tamil for arrow, *ambu*, appears to correspond very closely to the Mandingo *tambu* used for spear. So, also, the African Basa word for arrow, *puro*, closely resembles the Carib *parau* for the same weapon. To what extent these resemblances may be taken as proof of connection, is a point which Mr. Hyde Clarke submits for the consideration of anthropologists. Other tables given in the paper showing the connection in the same languages between the weapons and the materials of which they are formed, appear to me to afford more certain indication of origin and proof of connection, even where direct archæological evidence may be wanting.

2. "On the Study of Language," by H. Sweet, Esq., President of the Philological Society. This valuable paper has been read so recently, that I have not yet had an opportunity of looking it over.

SOCIOLOGY.—*Eight Papers.*

1. "On the Belief in Bhutas and Ghost and Devil Worship in India," by M. T. Walhouse, Esq.

2. "On Rhabdomancy and Belomancy or Divination by the Rod and by the Arrow," by Miss A. W. Buckland.

3. "Remarks on Japanese Mythology," by E. B. Tylor, Esq., F.R.S., LL.D.

4. "On the term Religion, as used in Anthropology," by W. L. Distant, Esq.

5. "On the Origin of Numerals," by A. Tylor, Esq.

6. "On Custom and Belief among the Ancient Chaldæans," by A. L. Lewis, Esq.

7. "Remarks on a Collection of Iron Arrow-heads from Southern India," by M. J. Walhouse, Esq.

8. "Note on Serpent and Siva Worship in Central America," by Hyde Clarke, Esq.

I regret that space does not enable me to give an account of the Sociological papers which undoubtedly form one of the most interesting branches of our science. I felt bound to give the place of honour to our inductive over our deductive subjects. These two constitute the law and the prophets, anthropologically speaking, and whilst our main function consists in storing up knowledge for posterity, the prophets may be left to take care of themselves.

The "Remarks on Japanese Mythology," by Mr. E. B. Tylor, will be read with attention by those who take an interest in the only people of modern times who present the phenomenon of high and vigorous progress by a line of development that is distinctly non-European.

Mr. Walhouse's paper on the "Belief in Ghost Worship in India," suggests many curious parallels between the superstitions of the natives and others which are still flourishing amongst ourselves.

Amongst those subjects with which Sociology deals, the beliefs and superstitions of mankind always attract a full measure of interest. Whilst differing in many details there is a singular uniformity of system which connects the beliefs of the highest with those of the lowest races of mankind. The subject admits of a two-fold treatment, namely, the historical, by which we trace the continuity, migration, and development of the creeds, and the psychological, by which we investigate the phenomena to which the acceptance of the beliefs are due. Our great difficulty in the case of savages and semi-barbarous people is to understand their exact meaning, and this is a source of frequent error.

When therefore we find similar beliefs appearing amongst the members of our own community, it is desirable we should take the opportunity of studying them carefully, where familiarity with the language and culture of the believers, and ample time for observation, enables us to avoid making those mistakes to

which in dealing with other races, Anthropologists are especially prone. In doing this, however, a mind which is itself free from narrowness and intolerance is essentially necessary to success.

Upon the whole the Institute may be congratulated upon the progress that has been made during the past year. Amongst the papers which I have referred to, it will be seen that three relate to tribes that have never before been visited by Europeans.

After deducting deaths and withdrawals, the latter I am happy to say being very few, the Institute during the past year has increased its numbers. The proceeds arising from the sale of the Journal have considerably increased. Thanks to the vigilant economy of our Treasurer, our finances are in a flourishing condition, and the liabilities during the past year have been greatly diminished. I beg now to thank the Treasurer and Directors for their valuable assistance, and to hand over the Presidency to Mr. Evans.

Mr. FRANKS moved, and Lord ARTHUR RUSSELL seconded the motion, "That thanks be returned to the President for his Address, and that he be requested to allow it to be printed."

Carried unanimously.

Biographical Sketch of Mr. W. Bollaert.

Mr. William Bollaert was born in 1807, and at an early age entered into scientific pursuits. He was for some time chemical assistant to Sir Humphrey Davy, Mr. Faraday, and Mr. Brande, at the Royal Institution.

Owing to his father's blindness and consequent inability to attend to his profession of medicine, Mr. William Bollaert was unable to continue his connection with the laboratory of the Royal Institution, and accepted an offer at the age of 18 to go to Peru as assayer and chemist in the survey of some silver mines.

Whilst in Peru Mr. Bollaert devoted his attention to the geography, geology, and natural history of the country, and wrote many interesting papers on these subjects, which were read and published by various Societies.

In 1827 he made, at the request of the Intendente Castilla

(afterwards President of Peru), a survey of the Province of Tarapacu, and his observations on the geography of Southern Peru, including survey of the Province of Tarapacu, and route to Chili by the coast of the Desert of Atacama were read before the Royal Geographical Society.

He also published details of the nitrate of soda formation and new boracic acid mineral in Peru. Mr. Bollaert was one of the first white men who crossed the Desert of Atacama, exploring the country in search of the meteoric iron of Atacama.

Returning to England, Mr. Bollaert endeavoured to make arrangements to explore the East Coast of Africa, the sources of the Nile, and to cross the African Continent, with the assistance of the Government and the Royal Geographical Society, but was unable to get his proposals carried out.

In 1832 Mr. Bollaert fought as a volunteer in the Civil War in Portugal, and in 1868 published "The Wars of Succession of Portugal and Spain from 1826–40," with an Account of the Siege of Oporto and Political and Military Reminiscences. For his services he received the war medal, and was created a Knight of the Order of the Tower and Sword of Portugal.

He was afterwards engaged in assisting Baron de Huber in the financial affairs of Don Carlos and Don Miguel, during the war in Portugal and Spain, and received from Don Miguel the decoration of the Order of Fidelity.

On the abdication of Don Miguel and Don Carlos, Mr. Bollaert went to Texas to explore the country as to its fitness for European emigration, and at the request of H.B.M. Consul at Galveston examined the coasts and interior, and made reports thereon, which were sent to the Admiralty.

Mr. Bollaert wrote several papers on the Indian tribes, the botany, and natural history of Texas for various societies and publications.

On returning to England, his health was much impaired by yellow and intermittent fevers, and he was obliged to remain at home for some time.

In 1853 Mr. Bollaert received the bronze medal of the Society of Arts from the hands of the president, the late Prince Albert, for his "Essay on Salt, with observations on the origin of Salt and Saline Bodies," and giving further details of the inexhaustible quantities of nitrate of soda existing in Peru, and information concerning a new boracic acid mineral.

Mr. Bollaert again returned to Peru and made some interesting antiquarian and ethnological researches in New Granada, Equador, Peru, Chili, accounts of which, with his observations on the pre-Incarial, Incarial, and other monuments of Peruvian nations, are published by Messrs. Trübner and Co.

Several interesting papers on the gold ornaments, pottery, &c., discovered by him in the ancient tombs of Peru were published in the Transactions of the Society of Antiquaries in London, and he presented to the British Museum a number of specimens, amongst others, a very fine specimen of modelling, a vase representing the head of a Chinese ruler.

Mr. Bollaert examined the coal-mines of Chile, and his report was read at the University of Santiago, and before the Royal Geographical Society of London.

For this and for his researches in Peru, the University of Chile elected him a corresponding member.

After remaining for some time in South America, visiting Mexico and the whole of the West Coast, crossing the Andes, and visiting the Argentine Republic, the Brazils, and Paraguay on the East Coast, he returned to England. A severe illness and disease of the lungs quite incapacitated him for any further active life, and during his later years he was unable to take any active part in following his favourite pursuits of science, but from time to time published accounts of his researches for the Royal Geographical Society, the Ethnological Society, the Society of Antiquaries, the Medico-Botanical Society, the Anthropological Institute, and the Society of Literature, and for various scientific publications.

Among his numerous contributions to the Transactions of this Institute and the Societies included in it are:—

1st. Observations on the Indian Tribes in Texas: Journal Eth. Soc., ii, 262 (read 10th April, 1850).

2nd. On the History of the Meas of Peru and on the Indians of South Peru, ib. iii, 132 (12th May, 1852).

3rd. On the Jivaro Indians of Ecuador, ib., N.S., ii, 112, 18th February, 1862.

4th. On the Tombs of Chiriqué in Veraguas, ib., 147, 18th March, 1862.

5th. On the alleged Introduction of Syphilis from the New World. Journal Anthrop. Soc., ii, cclvi, 17th May, 1864.

6th. Past and Present Populations of the New World. Memoirs Anthrop. Soc., vol. i.

7th. Palæography of the New World, id.

8th. On the Astronomy of the Red Man, id.

9th. On the Maya Hieroglyphic Alphabet of Yucatan. Memoirs Anthrop. Soc., ii, 46.

10th. Contributions to an Introduction to the Anthropology of the New World, id., 92.

11th. Fossil Pottery found on the Shores of Ecuador. Memoirs Anthrop. Soc., iii, 163.

12th. Examination of Hieroglyphics of Yucatan, id., 288.
13th. Ancient Peruvian Graphic Records, id., 351.

Mr. Bollaert had been for many years a corresponding member of the Ethnological Society. On the formation of the Anthropological Society, he joined its Council, and in 1865 and 1866 held the office of honorary secretary. Every one who had the advantage of being associated with him bears the liveliest recollection of his unvarying courtesy and kindness, and of the liberality with which he was always ready to place at the disposal of others his abundant stores of knowledge.

[The Council have been favoured by permission to reprint the following account of the late David Forbes, abridged from the Anniversary Address to the Geological Society of Professor P. M. Duncan, F.R.S., President]:—

David Forbes, late Secretary of the Geological Society, a Fellow of the Royal Society and of the Chemical Society, a most distinguished practical and theoretical mineralogist, metallurgist, and general geologist, was brother to the late Edward Forbes. He was born at Douglas, in the Isle of Man, in 1828, and was partly educated there and at Brentwood, in Essex. Subsequently he entered the University of Edinburgh, and studied chemistry, of which he was very fond as a boy, under Mr. Wilson.

Whilst still very young he was appointed to the superintendence of the mining and metallurgical works at Espedal, in Norway, a post which he held for some years. Capable of enduring great fatigue and full of resources, Forbes travelled far and wide over the country, and studied nature carefully and sedulously. He was especially careful in his investigations of the method of the occurrence of the different minerals in the rocks of the area; and his knowledge of chemistry and petrology enabled him to shed much light upon the causes of the appearance of important mineral species. A careful collector, a most painstaking note-taker, and an admirable analyst, he began to form that collection of rock-specimens, minerals, and analytic results of which he was so proud in after years.

Connected with important industries, Forbes had many opportunities of observing the behaviour of rocks under great heat and pressure, and the study of the peculiar nature of the geology of the country kept these results constantly before him. He became a close observer and a broad thinker upon all those subjects which are connected with physico-chemical changes in rocks, and which at that time were the cause of great debate and much dogmatism.

His work grew, and in his communication to this Society, entitled " On the Causes producing Foliation in Rocks, and on some observed cases of Foliated Structure in Norway and Scotland," and which was read Jan. 31, 1855, Forbes gave an interesting example of the foliation of a blue limestone which rested on mica-schist, near Crianlorich, Perthshire.

Whilst thus investigating some of the most interesting problems of the day, Forbes, ever an active man of business, became a partner in the firm of Evans and Aikin, nickel-smelters, of Birmingham; and this connection necessitated his visiting and carefully surveying, in a mineralogical sense, Chili, Bolivia, and Peru. Residing in the midst of the grandest developments of igneous rocks, and constantly engaged in important economical operations, Forbes at last wrote a paper which will always remain as a classical contribution. It was in 1860, and after his return from South America, that Forbes read his important communication before the Geological Society " On the Geology of Bolivia and Southern Peru." It was the result of observations made from 1857 to 1860, and contained most valuable sections and a map, which give a very excellent idea of the difficulties which the geologist had to encounter, and explained the discrepancies of such previous observers as D'Orbigny (1842) and Pissis in 1856.

This great paper was a model essay, and exhibited the author's geographical knowledge, his correct belief in the metamorphosis of vast masses of rocks, of the influence of contemporaneous and intrusive rocks, and in the grand cycles of physical and chemical change which accompany the evolution of mountain-ranges on the grandest scale.

One of Forbes's most characteristic essays was the lecture delivered before the Fellows of the Chemical Society on Chemical Geology. In it, after asserting that the investigator in the study of Chemical Geology must of necessity call in to his assistance a knowledge of the collateral branches of the natural sciences, he plunged into his subject, and stated that the study of mineralogy, being the alphabet of petrology, shows that many important and common mineral species may have been formed at different times by very diverse processes. He considered that this should warn us against deciding upon any one formative cause to the exclusion of other agencies, and led the argument towards the dangers of receiving, without further knowledge relating to " dissociation," the prevailing doctrines of the origin of the globe and its minerals from the nebular and stellar condition. But, nevertheless, he argued strongly upon the propriety of considering the known facts regarding pressure, fusion, and chemical affinity under exceptional conditions, in forming

an hypothesis relating to the early stage of the globe. He gave it an atmosphere at an early date, and believed that the solid sphere would resolve itself into three great zones. In the first, or crust, highly acid silicates with free quartz would prevail, their bases being chiefly alumina and potash, with minor quantities of soda, lime and magnesia, &c.; below this a second zone of silicates of more basic character and greater density, the bases being lime, magnesia, &c., but with minor quantities of potash; and a still deeper zone of the denser metallic elements in combination with sulphur, arsenic, &c. He imagined that in the first instance we should have the atmosphere next the earth composed of a dense vapour of those compounds which are volatile only at a high temperature, such as the vapour of chloride of sodium. Above this would be carbonic acid, the oxygen and nitrogen, and finally the vapour of water. His idea of the effect of the cooling of such an atmosphere was extremely ingenious, as was also his reasoning upon the manner in which the crust should behave under the influence of cooling and solidification. Finally, after criticising all the data on which these theories can stand, and explaining the difficulties in the way of the aqueous origin of granite, he remarked upon the varying nature of the mineralogy of consecutive plutonic outbursts.

An essay almost as interesting and as suggestive as that just mentioned was written by Forbes in 1869, on "The Nature of the Interior of the Earth." This essay is especially useful, as it places the opinion of Delaunay in opposition to that of Mr. Hopkins regarding the influence of a liquid interior upon precession and nutation, and as it insists upon the possible relative increase of infusibility under great pressure. Forbes, however, quotes Palmieri's observations on the tidal phenomena of the eruptions of Vesuvius against the opinion of the merely local source of origin of volcanic phenomena. Finally, after recognising that the internal specific density of the earth must depend upon something more than pressure, the result of gravitation, he returns to the suggestion made in the paper centrally.

Ever active in scientific enquiry, and labouring in the direction of metamorphic changes, he became an adept in the employment of the microscope in rock-studies; and it was hoped that his great series of analyses would have resulted in a work on petrology.

Much of his time was occupied by the Iron and Steel Institute, of which he was the Foreign Secretary, and also in professional labours in nearly every country in Europe and latterly in Spain. But communications came from his pen, especially to the "Geological Magazine," and to the Anthropological Insti-

tute, and he still found time to fulfil the onerous duties of Secretary to the Geological Society. Upwards of fifty papers were written by him, besides his elaborate reports for the Iron and Steel Institute.

A great linguist, a most genial companion and loving friend, and a man possessed of great energy, he was wounded in spirit by the loss of his wife, who was singularly adapted to his tone of mind. Getting into weak health, he died suddenly on Dec. 8, 1876, and only a few days after he had taken part in a discussion at one of the meetings of the Geographical Society.

To this eloquent and well-earned tribute, it may be added that he was present at the last Council of the Anthropological Institute held in his lifetime.

He became a member of the Council of the Ethnological Society in 1869, and on the 21st July, 1870, read before that Society the admirable paper "On the Aymara Indians of Bolivia and Peru," which appears in this Journal, New Series, iv, 193. On the formation of the Anthropological Institute, he became a member of its Council, and continued so until his death.

The Scrutineers then made their report, and the following officers and Council for the Institute for the year 1877–78 were declared to be elected unanimously:—

President.—John Evans, Esq., F.R.S.

Vice-Presidents.—Prof. Geo. Busk, F.R.S.; Hyde Clarke, Esq.; Col. Lane Fox, F.R.S.; A. W. Franks, Esq., M.A., F.R.S.; Francis Galton, Esq., F.R.S.; E. Burnet Tylor, Esq., F.R.S.

Directors and Hon. Secs.—E. W. Brabrook, Esq., F.S.A.; Capt. Harold Dillon, F.S.A.

Treasurer.—J. Park Harrison, Esq., M.A.

Council.—J. Beddoe, Esq., M.D., F.R.S.; J. Barnard Davis, Esq., M.D., F.R.S.; W. Boyd Dawkins, Esq., F.R.S.; W. L. Distant, Esq.; Robert Dunn, Esq., F.R.C.S.; Chas. Harrison, Esq., F.S.A.; H. H. Howorth, Esq., F.S.A.; Prof. T. McK. Hughes, F.G.S.; Prof. Huxley, F.R.S.; A. L. Lewis, Esq.; Sir John Lubbock, Bart., F.R.S., M.P.; R. Biddulph Martin, Esq.; F. G. H. Price, Esq., F.R.G.S.; J. E. Price, Esq., F.S.A.; Prof. Rolleston, M.D., F.R.S.; F. W. Rudler, F.G.S.; C. R. Des Ruffières, Esq., F.R.S.L.; Lord Arthur Russell, M.P.; Rev. Prof. Sayce, M.A., M.R.A.S.; M. J. Walhouse, Esq., M.R.A.S.

A vote of thanks to the Scrutineers for their labours was then passed, and the meeting separated.

ANTHROPOLOGICAL MISCELLANEA.

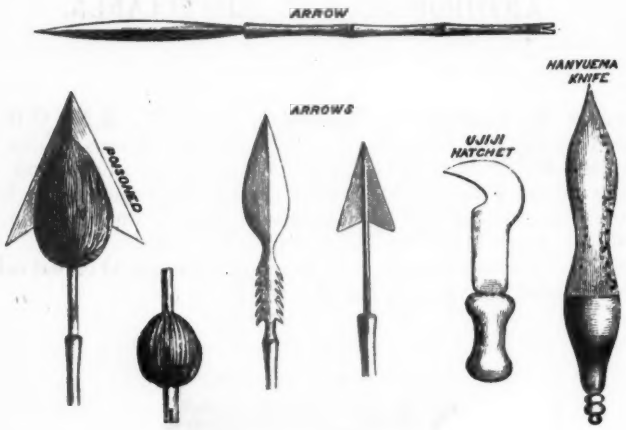
THROUGH the kindness of Commander Cameron, R.N., C.B., and Messrs. Daldy and Isbister, the publishers of "Across Africa," the following woodcuts from that work are given, as illustrating many of the objects referred to by Commander Cameron, in his lecture at the Royal School of Mines, Jermyn Street, on May the 23rd, 1876, vol. vi, p. 117 of the Journal of the Institute.

Fig. 1.—Arms and ornaments, Wagogo. The shield is that referred to by Colonel Fox, p. 178, line 7.

Fig. 1.

Fig. 2.—Arms, &c., Ujiji. The method of applying the poison to arrows is shown and the Manyuema knife is of the form mentioned by Colonel Fox, p. 178, line 1.

Fig. 2.



The second arrow from the left has a corrugated blade, as referred to by Commander Cameron, p. 176, line 5.

Fig. 3.—A handa, see p. 174. The copper is brought from Urua, in pieces, called "handa," varying in weight from 2½ lbs. to 3 lbs. They are cast in the rough shape of a St. Andrew's Cross, and the diagonal measurement is from 15 to 16 inches, while the arms are 2 inches wide and ½ an inch thick. Many of them have a raised rib along the centre of the arms.

Fig. 3.

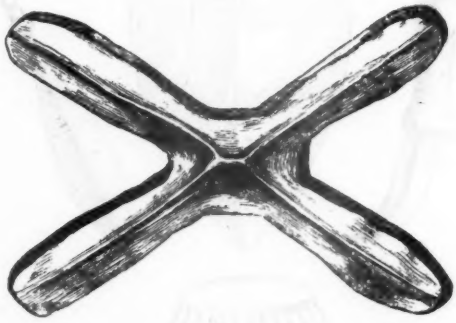


Fig. 4.—Whistle, hatchet, and pillow, Uguhha. All the men carry whistles, with which they signal to one another on the road.

Fig. 4.

Fig. 5.—Arms, &c., Lovalé. 1, fish spear; 2, 3, spears; 4, 5, 6, arrow heads; 7, 8, 9, modes of stringing bows; 10, 11, 12, knives; 13, 14, walking sticks; 15, charm; 16, 17, 18, drums; 19, iron gong (referred to by Colonel Fox, p. 177, l. 3 from bottom); 20, 21, iron bells; 22, musical instrument; 23, marimba; 24, sticks for playing marimba 25, rattle.

Fig. 5.

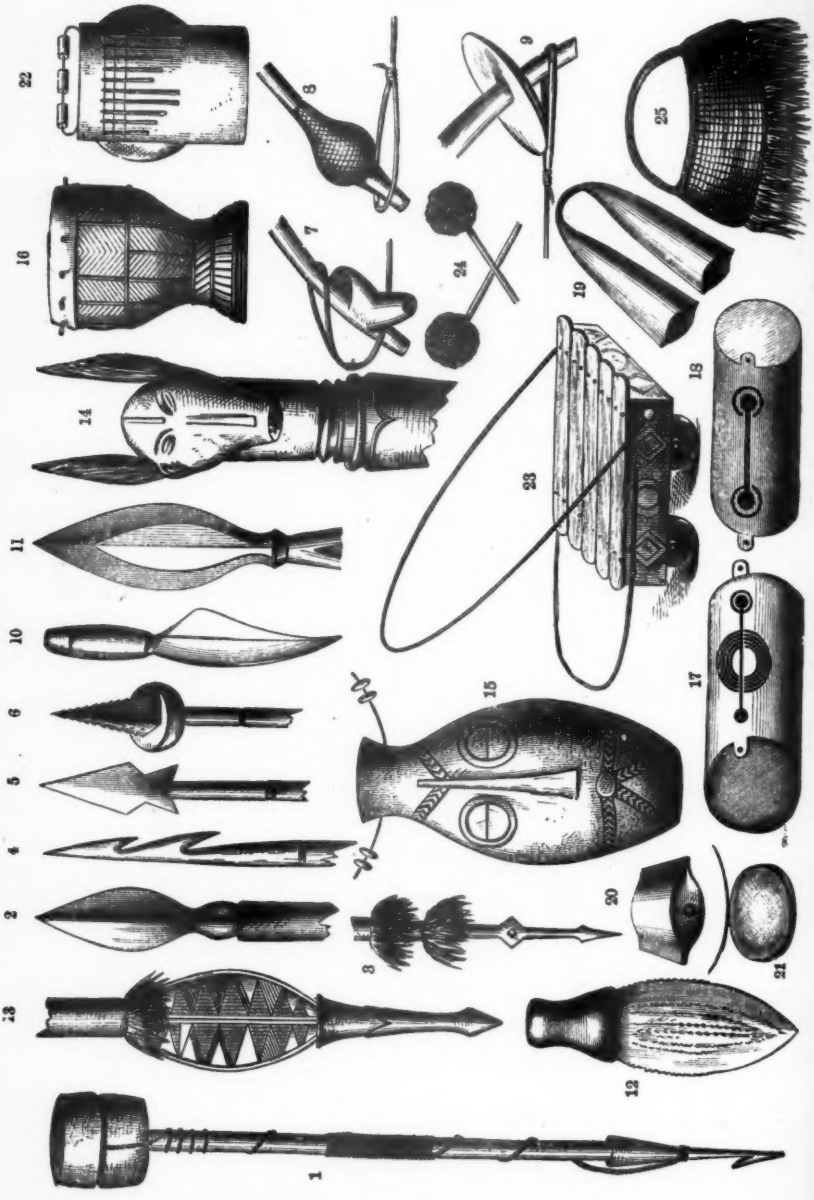


Fig. 6 and 7.—Arms, &c., Lovalé, see page 174. In Fig. 6 is shown the method of attaching the feathers to the arrow, and the various forms of metal arrow head. A wooden arrow head or bolt is also shown.

Fig. 6.

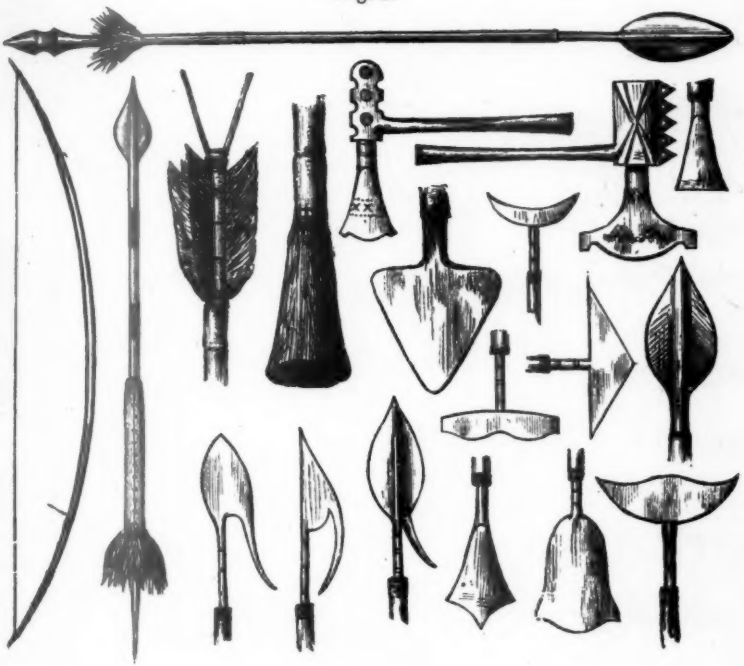


Fig. 7.

INDEX.

A.

Admiralty Islands, 379; betel-chewing, 402; burial, 416; canoes, 404, 422; colour, 385; customs, 402; diseases, 396; dress, 397, 399; dwellings, 403; expression of emotions, 395; food, 402; hair, 385, 400, 415, 421; history, 381; implements, 407; language, 387; ornaments, 399, 424, 426; religion, 414; stature, &c., 383, 421: tattooing, 401; weapons, 407, 423, 425.
Africa, the Anthropology of, 167.
America (Central), Mythology in, 247.
Andaman Islands, 229.
Annual general meeting, 487; presidential address, 491.
Anthropological notes on New Guinea, 102.
Anthropology, on the term "religion," as used in, 60.
—— in Africa, 167.
Argyll, the Duke of, on the anthropology of Africa, 178.
Armit, Lieut., on New Guinea, 115.
Arrow-heads, the classification of, 482.
Assyria, 138.
Australia, stone implements from, 37.

B.

Baba, Mr. Tatui, on Japanese mythology, 58.
Basque, 275.
Bell, Mr. Jeffrey, on the name "Mediterranean," 271.
Bishareen vocabulary, 191.
Black Burgh tumulus, 280.
Bouverie-Pusey, Mr. S. E., on New Guinea, 115.
Brabrook, Mr. E. W., on the natives of Old Calabar, 124; the origin of numerals, 136.
British Guiana, the tribes of, 324.
Broca, Dr. Paul, 275.
Bronze celts, 195.
Buckland, Miss, note on human and animal remains found at Bath, 246; on the Admiralty Islands, 420.
Burton, Capt. R. F., the Pélagosa Find, 54; on the Wanyamwesi, 168.
Busk, Prof. George, notes on a collection of skulls from Mallicollo and Vanikoro, 200.

C.

Caicos island, stone implements from, 37.
Cameron, Lieut., on the anthropology of Africa, 167.
Campbell, Capt., stone implements from Honduras, 37.
Campbell, Dr., on the Javanese, 364.
Canoes, New Guinea, 108, 115, 119; Admiralty Islands, 404, 414, 422.
Cave, Robin Hood, 95.
Chaldeans, ancient, 136.
Chalmers, Rev. W., 239.
Challenger Expedition, 379.
Charlesworth, Mr. E., the anthropology of Africa, 178.
Cheyne, Capt., natives of Lifri, 228.
Cimbri, ethnography of 150.
Cissbury, note on the animal remains found at, 20.
—— marks found upon chalk at, 263.
—— Report on some further discoveries at, 430.
Clarke, Mr. Hyde, on Japanese mythology, 59; on New Guinea, 119; prehistoric names of weapons, 142; ethnography of the Cimbri, 157; serpent and Siva worship in Central America, 247; on Votive statuettes, 316; on the Germanic race, 377.
Classification of arrow-heads, 482.
Comrie, Dr., anthropological notes on New Guinea, 102.
Conway, Mr. Moncure, on Japanese mythology, 58; ancient Chaldeans, 140.

Costa Rica, 248.
Cox, Mr. E. W., the mechanism of man, 97.
Crania, 102.
—— of the round barrows of Yorkshire, 328.
Cumberlow, bronze celts found near, 195.

D.

D'Alberti's, Sig. S. M., travels in New Guinea, 214.
Dawkins, Prof. Boyd, Robin Hood Cave, 95.
Dillon, Capt., on flint implements and arrow-heads from Ditchley, Oxfordshire, 55.
Discussions, 5, 19, 58, 68, 113, 124, 134, 140, 149, 157, 176, 208, 258, 262, 269, 299, 316, 364, 377, 420, 438, 456, 482.
Distant, Mr. W. L., on the term "religion," as used in anthropology, 60; the origin of numerals, 135; the natives of Nicobar Islands, 209.
Ditchley, flint implements from, 55.
Dress, 110, 212, 348, 397, 399.
Dwellings, New Guinea, 107, 214, 222; Javanese, 351.

E.

Earl, Rev. John, on the ethnography of Scotland, 9.
Ethnology of Germany, Part I, the Saxons of Nether Saxony, 364.
Ethnography of the Cimbri, 150.
Exhibitions: stone implements from Australia, 37; stone implements from Honduras; flint implements and arrow-heads from Ditchley, Oxfordshire, 55; skulls, poisoned arrows, shell and stone implements from Mallicollo and Vanikoro, 199; photographs of natives of Nicobar Islands, 209; photographs of natives of New Guinea, 214; iron arrow- and spear-heads from Southern India, 245; human and animal remains found at Bath, 246; Mexican hammock, 309; spears, creese knife from Perak, 310; clubs from British Guiana, 310; Bosjeman's skull, 310; Votive statuettes found at Tanagra, 310; feather dress and ornaments from the Amazon, 379.

F.

Fakaofo, 3.
Fiji, 227.
Financial Statement for 1876, 488.
Florida, Prehistoric Antiquities in, 99.
Fox, Col. A. Lane, on New Guinea, 113; Anthropology of Africa, 176; Flint cores, 262; marks found upon chalk at Cissbury, 269; Black Burgh Tumulus, 280; excavations at Seaford, Sussex, 278; Votive Statuettes found at Tanagra, Boetia, 310; Admiralty Islands, 421; marks found upon chalk at Cissbury, 438; on measurement taken of the officers and men of the 2nd Royal Surrey Militia, 443.
Franks, Mr. A. W., on stone implements from Honduras, 37; on Signor S. M. D'Alberti's Travels in New Guinea, 214.

G.

Gabb, Mr., on Central America, 248.
Germany, the Ethnology of, 364; Westphalia, 364; Topography, 367; Engern or Angraria, 368; Astfula, 369; Traditions of Old Saxony, 372.
Gill, Rev. Wyatt, on the Origin of the South Sea Islanders, and on some Traditions of the Hervey Islands, 2.
Gillespie, Dr., on Flint Cores as implements, 260.
Godwin-Austen, Major, on Prehistoric names of weapons, 149.
Goodenough, Commodore, on the natives of Mallicollo and Vanikoro, 335.

H.

Hair, 71, 104, 170, 191, 216, 218.
Hamilton, Mr. Charles, the Anthropology of Africa, 179.
Harper, Rev. W., on the Tribes of British Guiana, 324.
Harris, Dr. George, Treatise on Man, 92.
Harrison, Mr. J. Park, on the Ethnography of Scotland, 19; the term Religion as used in Anthropology, 69; Ancient Chaldeans, 141; chalk marks found at Cissbury, 263; re-

port on further discoveries at Cissbury, 430.
Hartley, Consul, on the Anthropology of Africa, 180.
Hervey Islands, some Traditions of the, 3.
Honduras, stone implements from, 37.
Hopkins, Consul, on the Anthropology of Africa, 180.
A.H.v.H. V. d. Horck, on the Laplanders, 316.
Howorth, Mr. H. H., the Arian Nomades. Part I. The Sauromatæ, 41; the Ethnology of Germany. Part I. The Saxons of Nether Saxony, 364.
Hunebedden, 158.

I.

Implements—stone from Australia, 37; Honduras, 37; flint from Ditchley, 55; New Guinea, 111; 175; Mallicollo and Vanikoro, 200.

J.

Japanese Mythology, 55.
Javanese, notes on the, 346; betel chewing, 360; canoes, 361; circumcision, 360; customs, 357, 359; dress, 348; dwellings, 351; food, 352; hair, 347, 348; language, 348; ornaments; 360; religion, 358; stature, &c., 347; weapons, 362.

K.

Kiehl, Mr. A. H., notes on the Javanese, 346.
Kintbury, ancient burial ground at, 196.
Kiwai Islands, 217.
Knowles, Mr. W. J., on the classification of arrow-heads, 482; find of prehistoric objects at Port Stewart, 485.
Kopernicki, Dr. Isidor, on the scaphoid skull of a Pole, 181.

L.

Language, prehistoric, 142; New Guinea, 119; Javanese, 348; Admiralty Islands, 387.
Language and thought, 457.
Laplanders, the physical condition of the, 316.
Lawson, Mr., on measurements, &c., 456.
Lee, Rev. F. G., the other world, 98.
Lewis, Mr. A. L., on Japanese mythology, 59; the origin of numerals, 135; custom and belief among the Ancient Chaldeans, 136.
List of presents—18, 37, 54, 101, 125, 141, 199, 245, 278, 309, 345, 378, 442.
Lubach, Dr., on Hunebedden, 158.
Lubbock, Sir John, on the Anthropology of Africa, 179.
Lucas, Mr. Louis, on natives of Suakin, and Bishareen vocabulary, 191.

M.

Mahori migrations, 232.
Mallicollo and Vanikoro, skulls from, 200.
—— the natives of, 335.
Man, Treatise on, 92.
—— the mechanism of, 97.
Mangaia, 3.
Manuâ, 2.
Mediterranean, note on the name, 271.
Meetings, ordinary, 1, 8, 37, 54, 101, 124, 141, 199, 244, 278, 309, 345, 378, 442.
—— special, 167.
Members, 1, 8, 54, 101, 199, 244, 278, 309, 345, 378.
Moggridge, Mr. M., on the term Religion as used in Anthropology, 69.
Mongolians, the eyes of, 194.
Moorea, 2.
Mortimer, Mr. J. R., on some crania of the Round Barrows of the Yorkshire Wolds, 328.
Moseley, Mr. H. N., on the inhabitants of the Admiralty Islands, 379; on stone clubs from the Sandwich Islands, 430.
Mythology, Japanese, 55.
—— in Central America, 247.
Myths of the creation, New Zealand, 343.

N.

New Guinea, anthropological notes on, 102; burial, 109, 215; canoes, 108, 115, 119; colour, 105, 216, 218; customs, 108; diseases, 106; dress,

110, 216, 220; dwellings, 112, 215, 220, 222; food, 112; hair, 104, 114, 217; history, 115; language, 119; ornaments, 107, 217, 220; pillows, 216; religion, 106; skulls, 102, 218, 220, 222; stature, 103, 216, 219; tools and implements, 111; weapons, 112, 215, 221.
New Guinea, Signor D'Alberti's travels in, 215.
New Zealand, myths of the creation, 343.
Nicobar Islands, the natives of. Frontispiece, 209.
Numerals, the origin of, 125.

O.

Old Calabar, religion, politics, and commerce of, 119.

P.

Papuan migrations, 227.
—— race, 216.
Philology, 210.
Physiognomy, 105.
Pigmy graveyard in Tennessee, 100.
Pole, the scaphoid skull of a, 181.
Port Stewart, find of prehistoric objects at, 485.
Pottery, 213, 304.
Prehistoric antiquities in Florida, 99.
—— language, 142.
—— objects at Port Stewart, 485.
Price, Mr. John E., notes on Romano-British cemetery at Seaford, 300.
Price, Mr. F. G. H., notes on Romano-British cemetery at Seaford, 300.
Pruner-Bey, Dr., on human hair as a race character, 71; on Basque skulls, 275.

R.

Rankin, Mr. W. L., on the South Sea Islanders, 223.
Rawlinson, Canon, on the ethnography of the Cimbri, 150.
Report on the Island of Tristan D'Acunha, 338.
Report of Council for 1876, 489.
Rolleston, Prof., on animal remains sound at Cissbury, 20; Admiralty Islands, 420; chalk marks found at Cissbury, 438.
Romano-British cemetery at Seaford, 300.
Rotumah, tombs in the island of, 5.

S.

Sarmatæ, the Sauromatæ or, 41.
Saxony, the Saxons of Nether, 364.
Scaphoid skull, 181.
Scherzer, Councillor de, on serpent worship in Central America, 258.
Scotland, ethnography of, 9.
Scrutineers of ballot, 516.
Seaford, excavations at, 287; Romano-British cemetery at, 300.
Serpent and Siva worship in Central America, 247.
Siva worship, 247.
Skin and colour, New Guinea, 105, 216.
Skull of a Pole, 181.
Skulls from Mallicolo and Vanikoro, 200; New Guinea, 220, 222.
South Sea Islanders, 2, 223.
Spratt, Dr., on the term religion as used in anthropology, 68.
Stature, New Guinea, 103, 216, 219; Javanese, 347; Admiralty Islands, 383, 421.
Suakin, the natives of, 191.
Sweet, Mr. Henry, on language and thought, 457.

T.

Tanagra, votive statuettes found at, 310.
Tanganyika, 169.
Tennessee, pigmy graveyard in, 100.
Tombs in the island of Rotumah, 5.
Torres Straits, 217.
Traditions of the Hervey Islands, 3.
Tristan d'Acunha, report on the island of, 338.
Turk's Islands, stone implements from, 37.
Tylor, Mr. A., the origin of numerals, 125.
Tylor, Mr. E. Burnet, remarks on Japanese mythology, 55; on the term religion as used in anthropology, 68; 249; on language and thought, 482.

U.

Ubudjwa, 170.

V.

Vanikoro and Mallicollo, skulls from, 200; the natives of, 335.

W.

Wagenya, 171.
Walhouse, Mr. M. J., on the ethnography of Scotland, 19; on iron arrow and spear heads from southern India, 245.
Walker, Mr. J. B., notes on the natives of Old Calabar, 119.
Wanyamwesi, 168.
Weapons, 112, 142, 215, 217, 221.
Wood, Mr. W., on the tombs in the Island of Rotumah, 5; on skulls from Mallicollo and Vanikoro, 208.

Y.

Yorkshire Wolds, crania of the Round Barrow of, 328.

CORRIGENDA ET ADDENDA.

Vol. VI.

Page 9, line 22 from the top, for "Philosophical," read "Philological."
" 92, " 4, read "before the Anthropological Society of Paris, March 19th, 1863."
" 158, " 2 from bottom, for "ten miles," read "ten metres."
" 160, " 15 from bottom, for "sleitshoenen," read "sluit-steenen."
" 161, " 18 from top, for "Yanssen," read "Janssen."
" " 5 from bottom, for "Part of the village of Odoven," read "Part of the church of the village of Odoorn."
" 162, " 13 from top, for "res hullins," read "res nullins."
" " 13 from bottom, for "Finaarloo," read "Tinaarloo."
" " 6 from bottom, for "Baron Slaet," read "Baron Sloet."
" " 4 from bottom, for "Minister Sock," read "Minister Fock."
" 163 " 2 from top, for "Y. L. G. Gregory," read "J. L. G. Gregory."
" 164 " 6 from bottom, for "Odovru," read "Odoorn."
" 165 " 9 from top, for "Rumen," read "Buinen."
" 212, in note *, for "Capt. Tule," read "Capt. Zoule."
Plate facing page 5 should be Plate I.
" " 80 " " II, III, IV.
" " 112 " " V.

HARRISON AND SONS, PRINTERS IN ORDINARY TO HER MAJESTY, ST. MARTIN'S LANE.

NOTICES.

M. G. de Mortillet announces that it is proposed to organise an Anthropological exhibition at Paris in 1878, comprising—1. Anthropology and Craniology; 2. Ethnography of France and other countries, especially savage ones; 3. Prehistoric Archæology or Palæethnology; 4. Linguistic Anthropology. Societies or individuals desirous of taking part in the above, are requested to communicate with M. G. de Mortillet, Château de St. Germain en Laye (Seine et Oise), stating the class of objects proposed to be exhibited.

Prof. Virchow, of Berlin, announces that casts of the anthropomorphous apes lately living in the Gardens of the Berlin Aquarium, and models of the existing gorilla in the same collection, are for sale, as also photographs of the above. Particulars may be obtained from Dr. Hermes, of the Berlin Aquarium.

The formation of a scientific club for Vienna, under the presidency of his Excellence, Dr. A. Ritter von Schmerling, is announced. It is situated in the Eschenbachgasse.